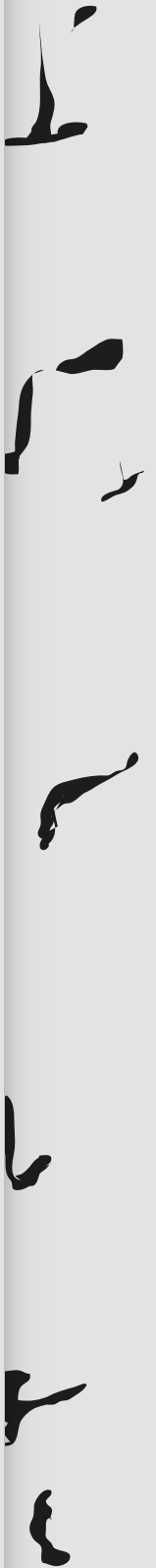


# D W E L L I N G A S P R O D U C T



ANTTI PIRINEN, born in 1972, holds a Master of Arts degree in Spatial Design from the University of Art and Design Helsinki. As a design researcher at Aalto University, he has been working in multidisciplinary projects where approaches from user-centred design are applied to the development of housing and the living environment. He is particularly interested in the conceptual and strategic aspects of housing design.



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Aalto University publication series  
DOCTORAL DISSERTATIONS 12/2014

Aalto University  
School of Arts, Design and Architecture  
Aalto ARTS Books  
Helsinki  
[books.aalto.fi](http://books.aalto.fi)

GRAPHIC DESIGN  
UHQ (Tuomas Kortteinen  
& Jaakko Suomalainen)

MATERIALS  
Munken Print White 100g,  
Colorit 270g & 160g

FONTS  
Geffrye Sans & Sans Mono

ISBN 978-952-60-5544-2  
ISBN 978-952-60-5545-9 (PDF)  
ISSN-L 1799-4934  
ISSN 1799-4934  
ISSN 1799-4942 (PDF)

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Unigrafia  
Helsinki  
2014

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# Abstract

The dissertation investigates dwelling as a product from the perspectives of industrial production, users and design. It addresses the implications of social and technological change and concurrent expansion of design activity to housing. The central proposition is that dwelling despite its singularity and locatedness increasingly resembles other industrial products. This suggests a need for the reconceptualisation of it as an object of design. The study commits to a definition of design as value search and catalyst of social transformations.

The study develops a systems approach to dwelling, building understanding of dwelling as a composite adaptive product embedded in the material environment that mediates the intentions of producers, designers, users and other actors within the housing system. Its theoretical framework is based on the examination of dwelling as a hierarchically layered physical artefact, as an intentionally differentiable product in the market, and as an evolutionary realm.

The study applies methods of user-centred design research to the field of housing. It is a qualitative case study grounded on empirical data where the focus is on urban housing in Finland. The study comprises two empirical cases that are analysed through the same theoretical framework. The first case explores the commodification of dwelling as evidenced by five housing concepts realised in Finland and the interviews of residential developers. The second case looks at the everyday user experience of dwelling in light of a user study with 44 residents.

The first case shows that housing concepts in the market are constructed as bundles of attributes aiming to provide a benefit to the user. The concepts operate within the hierarchy of built form by singling out and proposing to consumers elements anticipated to be valuable to them. There is variation in their material “depth”, their extent of user engagement, and the degree to which they determine the design of a singular housing project. The concepts mediate the requirements of production and users by simultaneously serving standardisation/replication and differentiation/personalisation of housing solutions. Commercial concepts typically rely on technological innovation such as mass customisation whereas user-initiated concepts primarily aim at solving social needs.

The commodification of housing and introduction of duplicable housing concepts have led to the emergence of concept design as a practice in the housing industry. The design of dwelling thereby has expanded beyond traditional building

design. However, the study identifies several bottlenecks in the residential development process that hinder diffusion of new concepts and diversification of the offering.

The second case attests that users as well describe their dwelling as a bundle of valuable attributes. Individual persons depending on their preferences, needs and life situation value the attributes of dwelling differently. Users also employ creative strategies of their own for adapting the dwelling product to their valuable ends. Dwellings delivered by the production system in this way continue to change. The study highlights the reciprocal relationship between users and dwellings and the importance of the inclusion of the specific dwelling artefacts to research on residents' needs. The existing offering of housing and features of their past and present dwellings impact people's experience of dwelling. Everyday life brings contingency into the relationship which erodes the possibility of complete user-specificity in dwelling.

The results indicate that dwelling as a product and object of design extends beyond housing architecture, constituting a heterogeneous composite of designable elements with varying degree of materiality distributed across the levels of built form, including aspects related to technology, services, the community and ownership. The elements serve the strategies of producers and users with individual variation in their meaning and value. Design here can target a specific element or integrate valuable elements across the system. The study contributes to the practical problem area of user-centred diversification of urban housing production by opening up the potential of conceptual and strategic design in housing.

# Asunto tuotteena: Näkökulmia asuntorakentamiseen, käyttäjiin ja muotoilun laajenemiseen

Väitöskirjassa tarkastellaan asuntoa tuotteena teollisen tuotannon, käyttäjien ja muotoilun näkökulmista. Työ pyrkii kuvaamaan sosiaalisen ja teknologisen muutoksen ja niihin kytkeytyvän muotoilutoiminnan laajenemisen vaikutuksia asuntorakentamiseen. Tutkimuksen keskeinen väite on, että yksittäisyydestään ja paikallisuudestaan huolimatta asunto ja asuminen muistuttavat yhä enemmän muita teollisia tuotteita. Tämä avaa uusia tapoja käsittää ne suunnittelun kohteena. Tutkimuksessa muotoilu ja suunnittelu määrittyvät laajasti arvon etsimisenä ja sosiaalisten muutosten käynnistäjänä.

Tutkimus kehittää systeemistä lähestymistapaa asumiseen. Siinä rakennetaan ymmärrystä asunnosta moniaineeksena adaptiivisena tuotteena, joka on upottunut materiaaliseen ympäristöön ja välittää tuottajien, suunnittelijoiden, asukkaiden ja muiden asuntojärjestelmän toimijoiden tavoitteita. Työn teoreettinen viitekehys pohjautuu asunnon tarkasteluun hierarkisesti järjestyneenä fyysisenä artefaktina, tietoisesti erilaistettavissa olevana kaupallisena tuotteena ja evoluutionomaisesti kehittyvänä kokonaisuutena.

Tutkimuksessa sovelletaan käyttäjäkeskeisen muotoilututkimuksen menetelmiä asumisen kentälle. Kyseessä on empiiriseen aineistoon pohjautuva laadullinen tapaus-tutkimus, joka rajautuu kaupunkimaiseen asumiseen Suomessa. Tutkimus sisältää kaksi empiiristä tapausta, joita analysoidaan saman teoreettisen kehikon kautta. Ensiksi kuvataan asumisen tuotteistumista viiden Suomessa toteutetun asumiskonseptin ja asuntokehittäjien haastattelujen kautta. Toiseksi luodetaan asumisen jokapäiväistä käyttökokemusta 44 asukkaan kanssa toteutetun käyttäjä-tutkimuksen valossa.

Ensimmäinen tapaus osoittaa, että markkinoilla olevat asumiskonseptit muodostavat ominaisuuskimppuja, jotka pyrkivät tarjoamaan asukkaalle jonkin edun. Konseptit operoivat rakennetun ympäristön hierarkisilla tasoilla nostaen esiin ja ehdottaen kuluttajille sellaisia asumisen osatekijöitä, joilla oletetaan olevan heille arvoa. Konseptien materiaallinen "syvyys", käyttäjäosallistamisen aste ja määräävyys suhteessa yksittäisen asuntorakentamiskohteen suunnitteluun vaihtelevat. Asumiskonseptit välittävät ja yhteensovittavat tuo-

tannon ja käyttäjien vaatimuksia, palvellen samanaikaisesti asuntotuotteiden vakiointia/toistettavuutta ja erilaistamista/personoitavuutta. Rakennusliikkeiden tarjoamat konseptit tyypillisesti hyödyntävät tuotannollisia ja teknologisia innovaatioita kuten massaräätelöintiä, kun taas käyttäjien itsensä aloitteesta syntyneillä konsepteilla pyritään ensisijaisesti ratkaisemaan sosiaalisia tarpeita.

Asumisen tuotteistuminen ja toistettavat asumiskonseptit ovat johtaneet konseptisuunnittelun lähestymistapojen omaksumiseen asuntoteollisuudessa. Asumisen suunnittelu on siten laajentunut perinteisen rakennussuunnittelun ulkopuolelle. Tutkimus kuitenkin osoittaa, että nykyisessä asuntokehitysprosessissa on useita pullonkauloja, jotka hidastavat uusien konseptien leviämistä ja asuntotarjonnan monipuolistamista.

Tutkimuksen toinen empiirinen tapaus vahvistaa, että myös käyttäjät kuvaavat asuntoaan arvokkaiden ominaisuuksien yhdistelmänä. Yksittäiset ihmiset henkilökohtaisista preferensseistään, tarpeistaan ja elämäntilanteestaan riippuen arvottavat asunnon ja asuinympäristön yhteisiä osatekijöitä eri tavoin. Käyttäjät myös hyödyntävät yksilöllisiä luovia strategioita asuntonsa muokkaamiseksi arvokkaiksi kokemiensa päämäärien mukaisiksi. Tällä tavoin tuotantojärjestelmän toimittamat asunnot jatkavat muuntumistaan elinkaarensa aikana. Käyttäjä tutkimuksen tulokset korostavat asukkaiden ja asuntojen suhteen vastavuoroisuutta ja spesifien asuntoartefaktien huomioimisen tärkeyttä asukkaiden tarpeita ja kokemuksia tutkittaessa. Olemassa oleva asuntotarjonta sekä omien aiempien ja nykyisten asuntojen käsinkosketeltavat muotoillut ominaisuudet vaikuttavat ihmisten asumiskokemukseen. Joka-päiväinen elämä tuo suhteeseen satunnaisuutta, mikä estää täydellisen yhteensopivuuden saavuttamista asumisessa.

Väitöskirja osoittaa, että asunto tuotteena ulottuu asuntoarkkitehtuuria laajemmalle, muodostaen heterogeenisen yhdistelmän muotoiltavissa olevia, materiaalisuuden asteeltaan vaihtelevia elementtejä, jotka sijoittuvat rakennetun ympäristön eri tasoille sisältäen myös teknologiaan, palveluihin, yhteisöön tai omistajuuteen liittyviä tekijöitä. Asuntotuotteen elementit palvelevat tuottajien ja käyttäjien strategioita ja niiden arvo ja merkitykset määrittyvät osin yksilöllisesti. Muotoilu tässä systeemissä tuotteessa voi kohdistua monin eri tavoin, esimerkiksi tiettyyn osaseen tai pyrkien yhdistämään useita asukkaalle arvoa tuottavia elementtejä. Tutkimus tuottaa uutta tietoa urbaanin asuntotuotannon kehittämiseksi avaamalla erityisesti käsitteellisen ja strategisen suunnittelun mahdollisuuksia asumisen ihmis-keskeisessä monipuolistamisessa.

# Acknowledgements

The work at hand feels but one milestone on a journey across a vast, partly uncharted territory. The path that I have set to follow has sometimes disappeared into thin air or led to a cul-de-sac, other times taken a sudden turn to reveal breathtaking new sceneries. On my sometimes lonely wandering on the fringes of design research and housing studies, I have navigated with the help of two guiding lights: human-centredness and conceptual design thinking.

In retrospect, I already embarked upon the expedition for over a decade ago, during master's studies in spatial design at the then University of Art and Design Helsinki, when I got interested in housing and dwelling and in the conceptual aspects of design. This eventually led to a researcherly career in the university's Future Home Institute, working in-between academia and industry in explorative research projects where approaches of user-centred design research were applied to living environment and to the field of housing. The unit later evolved into the Living Places research group at the Aalto University School of Arts, Design and Architecture. Several persons were important to my professional development during this period. I am grateful to late Professor Jan Verwijnen for first opening my eyes to the power of the conceptual in architecture and design, to Professor Anna-Maija Ylimaula for believing in me at a critical moment, and to Professor Jarmo Suominen for his unwavering enthusiasm about everything new.

Gradually this all began to take the shape of a doctoral dissertation. First and foremost, I should like to thank my thesis advisor Panu Lehtovuori, Professor of Planning Theory at Tampere University of Technology, Faculty of Architecture, for his vital help and advice during the accomplishment. Panu's extensive knowledge on architecture and urbanism as well as his humane wisdom have eased the work and made its uncertainties easier to bear.

My academic home between the years 2007 and 2011 was the Design Connections Doctoral Programme at the Department of Design. The director of the programme, Professor Turkka Keinonen and its coordinator, Professor Maarit Mäkelä have had a crucial impact to the advancement of the dissertation and to my general academic wellbeing. Another forum for reflecting the research in its early stages was provided by the Graduate School of Housing Studies and Social Change, run by Helsinki University of Technology's Centre for Urban and Regional Studies, of which opportunity I thank

Mervi Ilmonen. Professors Ilpo Koskinen and Pekka Korvenmaa were the key persons in the final stage of the project.

During the data collection period I was employed in three projects funded by the Finnish Funding Agency for Technology and Innovation (Tekes), the Finnish Ministry of the Environment and several companies. The projects were *Erilaistuva asuminen* (Diversification in Housing), *Asiakkuuden hallinta asumisessa* (Managing Customership in Housing), and *24 Living*. I should like to thank all the participants of the projects, especially Matti Tarhio, Niina Savolainen and Tero Vanhanen, as well as the 44 residents who freely offered their time for the user study. Kirsi Turkia and Renita Niemi conducted most of the user interviews with skill. Thanks are also due to Susanna Sucksdorff, Monica Aro and Antti Pirhonen for sharing their knowledge and insights on housing development in interviews conducted in 2011. Moreover, I am grateful to architect Pia Ilonen and Loppukiri resident Sirkka Minkkinen for valuable information.

The beginning of the writing process was made possible by a grant awarded by the Finnish Cultural Foundation, the Mortgage Society of Finland's Fund in 2009. For lengthy periods during 2011–2013 I received funding from the Department of Design, of which I express my gratitude to Turkka Keinonen, Tuuli Mattelmäki and Sari Dhima. Some of the work was funded by the Energizing Urban Ecosystems (EUE) programme run by the Strategic Centre for Science, Technology and Innovation of the Built Environment in Finland. Rarely has a research programme had a more absent-minded participant. Great thanks for patience.

Dr. Markku Norvasuo from the Aalto University School of Engineering's YTK Land Use Planning and Urban Studies Group and Dr. Juha Kostiainen from YIT Corporation have pre-examined the manuscript. I am thankful for their knowledgeable feedback and constructive criticism. I should also like to thank Professor Sten Gromark from Chalmers University of Technology, Gothenburg, Sweden, for kindly agreeing to act as my opponent. The contribution of publishing editor Pia Alapeteri and graphic designer Tuomas Kortteinen has been invaluable in getting the manuscript published and printed as a well-designed book. The School of Arts, Design and Architecture provided a grant for the printing costs and Hanna Sirén checked my language. Thank you all.

My closest colleagues during recent years have been Dr. Susanne Jacobson, Dr. Tero Heikkinen and soon-to-be Dr. Katja Soini. I would like to thank Susanne for cooperation in data collection and for sharing the everyday joys and hardships in the life of a doctoral candidate, and Tero for



insightful discussions and feedback. Katja originally introduced me to the world of user-centred design for almost a decade ago and continues to be energising company. Haian, Jaakko, Jung-Joo, Karthikeya, Kati, Kirsi, Kirsikka, Krista, Leirah, Lutz, Marketta, Pekka, Petra, Piia, Salil, Salu, Tatu, Tjhien, Zagros and the rest of the design research community: it has been a pleasure to share this endeavour with you. I would also like to thank my other present and former colleagues at Future Home Institute and Living Places.

Finally, my friends and family cannot be acknowledged enough for their emotional, intellectual and practical support. Those who have passed the same milestone well ahead have given good advice and set an example to follow. Talks with doctors Simo Muir and Pirja Heiskanen, whether in a bar or amidst the wilderness, have been especially important. You all made the effort worthwhile by just being there. I am grateful to my mother and to my father, with their spouses, for support and healthy disinterest. My sister, my brother with his family, and the extended family in Finland and abroad have provided welcome moments of distraction along the way. I am glad to dedicate this dissertation to my grandmother Kaisu Vehviläinen and late grandfather Kalervo Vehviläinen (1917–2009), whose hands I can feel on my shoulder, encouraging me to continue the journey.

Helsinki, January 2014  
Antti Pirinen

**1**

**INTROD**

UCTION



## Housing as a systemic design problem

The existence (or lack) of a home, a place to live in, is so fundamental to our experience of being in the world that it feels almost impossible to grasp in its psychological, social, cultural and material entirety. A researcher approaching the subject has to deal with a powerful model reproduced in the society, a historical continuum, a psychological and mental realm thick with intimate dreams and memories, a shelter, basic human necessity, a lived-in space and place, a physical architectural and technological construction, and an economic commodity and object of consumption in the market. The richness of this entity is made further evident by the abundance of words available for naming it and rendering it into a subject of scientific investigation. Depending on the field and focus of the study, words such as home, dwelling, house or housing may be used, among others, each associated with certain theories and presumptions.

In this dissertation, I have chosen to use the word *dwelling* for naming my subject because it acknowledges both the artefactual and the lived-in nature of housing and homes and emphasises the perspective of individual *users*. I will approach dwelling as a composite, systemically embedded *product* in the context of *design*. My focus is primarily on Finnish urban housing.

According to recent surveys, the overall quality of housing and the living environment in Finland is considered rather good. 97 per cent of respondents to the latest national Residents' Barometer survey were satisfied with their living environment (Strandell 2011). 80 per cent in another large survey stated that their dwelling suits their present needs well or very well (ROTH 2013, 14). Also the quality of new housing production has been viewed as relatively high by both residents and professionals in the field. Almost 90 per cent of residents living in new dwellings regardless of income level have expressed contentment with their dwelling (Hirvonen et al. 2005, 48). However, the demand for more diverse solutions and increased user participation have been identified as main development needs for housing production in several studies (Hirvonen et al. 2005, Ilmonen et al. 2005, Juntto 2007, Vainio 2008). Especially the current urban dwelling types in blocks of flats have been criticised as qualitatively homogeneous and lacking in resident control, flexibility and sustainability.

As the technical and material quality of urban dwellings has increased, their spatial quality, usability and variety has decreased (Kytösaho 2010). The price-quality ratio of new dwellings has also been considered unsatisfactory by residents (Juntto 2007, 84). It seems that the minimum expectations of residents concerning room sizes, fixed furnishings and equipment, accessibility, and the quality of outdoor spaces have risen (Myntti 2007, 22; Hirvonen et al. 2005).

It can be argued that housing in Finland is confined, expensive and the same for everyone. The design of dwellings has been based on stereotypical perceptions of a universal average resident. Builders operating within tight economic constraints are duplicating a few established conventional dwelling types with slight variations, not willing to take the risk of trying out new things. The public planning and regulation system aims, in principle, to guarantee the suitability of the living environment for all, but at the same time restrains diversification. Among the offering of dwellings in mass produced blocks of flats, alternatives effectively do not exist (Juntto 2007). Especially in the greater Helsinki region there appears to be both a quantitative and qualitative mismatch between what housing is available and where, and the housing needs and preferences of people (Myntti 2007).

The industrial housing system's<sup>1</sup> incompetence in overcoming this mismatch has been explained as an inextricably *systemic* challenge, where the improvement of just one sector cannot bring about permanent change (Krokfors 2010, 223). Karin Krokfors has identified several practical barriers of diversification in the Finnish housing production system. The municipal planning system, building supervision and land use policy are poorly equipped for managing the demand for diversity. Building legislation and regulations restrict variation and favour conventional designs. Increase of technical systems and environmental requirements constrain the design of buildings. The established building culture resists change and innovation, as do the value networks in housing committed to efficiency and profitability. Financing of housing lacks in resilience and risk management, and housing policy does not fully acknowledge the value of socio-cultural sustainability achieved by more individual and flexible housing. (Ibid., 223–242.) Characteristic to the housing sector are slowness of and resistance to change, complexity and political deadlocks (Juntto 1990, 22).

Discontinuities between various tasks and actors in the system hinder its responsiveness to changing demands, too. One significant gap is between academia and practice. Research about housing preferences and results of resident

1.

By housing system is meant the network of professional actors who on some level contribute to the realisation of housing, including policy-makers and regulators, planners, architects and designers, housing developers, construction companies, financiers, etc. See also Figure 2.

surveys are rarely applied to actual production, partly because they are often too generic to provide valuable input to design (Lapintie 2010b, 53–54). Another break has been identified between public urban planning and market-oriented housing production. Local aims specified by cities and municipalities, for instance, do not transfer well to commercial housing production relying on more generality and replicability (Väliniemi et al. 2008). In industrial housing production, as opposed to custom-designed housing, architects have two clients: the paying client (developer) with whom they negotiate the design solutions, and the user client (occupant) to whom they in most cases have no connection. Similar communication gap exists between the developer and the occupant. (Zeisel 2006, 50.) This means that explicit wishes of the future residents can rarely have a direct influence on a building.<sup>2</sup>

On the other hand, resistance to abrupt change is inbuilt to housing. The sheer physical mass and geographical rootedness of buildings make them stable as artefacts. Their long life cycle disfavours overly divergent design, as they are required to adapt to the needs of several generations of users and to future situations of living that may be unforeseen today. Despite industrialisation, the building process and the building industry still greatly rely on craft skill and on-site experience. (Groåk 1992, 6.) Economic aspects influence the situation as well. The high cost of housing and localness of the housing market limit the choices of consumers. Consideration of re-saleability reduces their willingness to avert from mainstream and seek for highly personalised solutions. Because of the costliness of housing production, trying out novel design solutions is a risk for the builders as well. The availability of buildable land and fluctuation of building costs and interest rates affect the volume of new housing construction and the ratio of private-sector and state-subsidised production. As the demand for housing has long outstripped supply in larger Finnish cities, there has been no incentive to variate the offering. Furthermore, the relatively low pricing of housing design in comparison to other architectural work feeds a tendency to duplicate the same architectural patterns (Ilonen et al. 2006, 30).

Also dwelling as activity is to a large extent reliant on permanence, routines and convention. Everyday interactions of people and the material objects of dwelling carry emotional significance and create attachment. Psychologically, the process of dwelling can be described as “motivated person-environment transaction, where the material environment is emotionally effective and becomes emotionally significant through manipulation (behavior and use over time)” (Kaiser &

2. Several of the general considerations regarding the state-of-the-art of housing presented here and elsewhere in the introductory chapters have initially been outlined by the author in an article written together with Tero Heikkinen and Susanne Jacobson (Heikkinen et al. 2008).

Fuhrer 1996). The main psychological functions of dwelling are the regulation of social relations (the control of others), and the representation and construction of aspects of one's own identity. Recurrent domestic practices have an important role in the construction of normality (Shove 2004). In this way, the dwelling actively participates in the construction of our lives. Domestic architecture in its familiarity, stability and continuity sustains reality and makes it seem consistent. Dwellings allow, suggest and detain behaviour. They are classifying, ordering and controlling devices that are connected to broader cultural and societal norms and power structures. They only become meaningful in use, and in their historical and local context. (Saarikangas 2002, 25–32.) Housing, according to Roderick J. Lawrence (1987), is a “total reconfiguration” of social, demographic, psychological, human behavioural and environmental structure. Housing theorist Peter King (2005) argues that experience of the *ordinary* is key to understanding housing. Housing and homes result from the deeply rooted need of “finding place, settling in and keeping it mine”. The utter mundaneness of dwelling (its “mineness” and “thereness”) is in contradiction with the innovation-orientedness of policy makers, academics and designers, who may force transformation simply out of boredom (ibid.). Juntto (1990 and 2010a) has similarly emphasised the cultural uniformity and slowness of change of Finnish housing and living.

Housing design therefore is an act of balancing between the generic and the individual within a largely predefined set of constraints. Planners, architects and designers need to weigh individual requirements against more general consideration of what is viable in the long term. This happens in accordance with the dominant paradigm of housing. The professional planning and design system has been criticised for treating users with their divergent needs merely as disturbances (e.g. Kortteinen et al. 2005). The attitude of authorities, builders and architects towards users has traditionally been patronising (Juntto 1990, 296). Thus, the question becomes not only how much and what kind of individuality in housing we desire and can afford, but how much we can be *allowed* by the society. The materialised living environment can be seen as a compromise of a multitude of intentions within the society as a whole, resulting in an average that is reasonably satisfactory for the majority. One may, however, question whose intentions dominate the outcome and whether some actors are rendered powerless in the process.

The situation may be influenced by the actors' implicit stereotypical perceptions of each other that prevail within the housing system (Interviews c1 and c3, see also



Rask et al. 2008). If a farcical comedy was to be staged on the subject of housing, the regulators and planning authorities would undoubtedly be cast in the role of stubbornly inflexible guardians of an imaginary common good, the developers as greedy speculators only interested in profit, the designers as high-headed artists living inside a professional bubble, and the users as ignorant fools with silly and unrealistic hopes and wishes, not capable of deciding for their own best.

According to Juntto (1990, 37) it is from a historical standpoint difficult to distinguish between enforced and voluntary developments in housing. Housing evolves in complex interaction of demand and supply, driven by policy, the market, and the preferences and choices of individuals and families. Juntto (2010a, 18–21) has also underlined the *path dependence* of housing. Each national housing culture as well as the locally available solutions are shaped by distinctive historical trajectories of decisions and practices, which makes it difficult, for instance, to directly compare housing in different countries. Similarly, personal housing histories and previous experiences affect people's housing decisions and the way they perceive housing. David Clapham (2005) has coined the term “housing pathway” for describing these individual routes over time, emphasising the meaning of housing as a means of personal fulfilment. In this kind of evolutionary framework, the overall development of the material forms of dwelling can be seen as continuous adaptation that happens slowly through incremental variation of precedents. Current dwelling types consist of well-established and tried-out features with a long inheritance, adapted to local culture and conditions. Indeed, as philosopher Manuel De Landa has suggested, homes as socio-material entities may be more “self-organised” than planned or designed (De Landa 1994).

Despite increasing knowledge on the needs of residents, advancement of technology and industrial processes, and good intentions of the professionals within the housing system, efforts to qualitatively expand the offering of housing seem difficult. The dilemma of sustainable user-centred diversification of the offering of industrially produced urban dwellings is a “wicked” societal problem *par excellence*. Wicked problems, as outlined by Rittel and Webber (1973, 160–165), are by nature ill-defined and confusing, subject to changing and contradictory requirements, and involve complex interdependencies. A single optimal solution to a wicked problem cannot be defined. A creative process of envisioning conceivable “good enough” solutions becomes an integral part of the definition of the problem itself. Richard Buchanan (1992, 16) has shown how this kind of indeterminacy is in

fact a key characteristic of most design problems, giving the design discipline an advantage in tackling such complexity: “The subject matter of design is potentially *universal* in scope, because design thinking may be applied to any area of human experience. But in the process of application, the designer must discover or invent a *particular* subject out of the problems and issues of specific circumstances.”

When looking at present housing production, it is evident that industrially produced housing is *designed* on many levels of which architectural design within a housing project is just one, although usually the most decisive. Different scales of urban planning provide a scaffold of specifications for the built form as do building codes and regulations. Housing developers pursue residential product development activities that aim at differentiation in the market and streamlining of production. Various components of dwellings such as technical interfaces, appliances and built-in furnishings are also professionally designed. Even elements that are outside the core physical product such as the customer service process can be an object of design. The development of new solution models and conceptual frameworks related to different aspects of housing by designers, academics and authorities can be seen as design activity as well. Dwelling therefore is an artefact to the definition of which multiple actors contribute either directly or indirectly in its various scales and phases of emergence. In so doing, each for their part contributes to the overall quality of the end product and its attractiveness to future residents, attempting to ensure that it is of acceptable functional and aesthetic standard, technically and economically viable, and sustainable in the long term.

Amidst a push in industrial production towards seriality, generality and conformity, architects and designers ideally need to find design solutions that are “just enough” (but not too much) and “exactly in the right way” singular, specific and novel. In this sense, the design of dwelling is about translating contradictory demands into reasonably satisfactory material configurations. Dwellings as artefacts mediate the intentions of authorities, the housing industry, designers, and residents, channelling them into a specific material format. They do so through their physical and other experienced properties that are essentially *designable*, meaning that they can be qualitatively manipulated and differentiated. There is little research on how dwelling as this kind of composite mediative product is to be defined in the framework of design. Especially the relationship between residents and dwelling as an object of design seems worth examining closer.

## Discourse on user-centred housing in Finland

It has been stated that research on housing in Finland is fragmented, practically oriented and theoretically weak. Critical cross-disciplinary research on housing especially from the perspective of residents has been lacking. (Ilmonen et al. 2005.) In social sciences and urban geography, housing is usually examined on a societal or regional level, providing information on phenomena such as segregation and urban sprawl, more useful to housing policy making and urban planning than to the design and production of dwellings. In accordance with the general trend in society, the focus of housing research in Finland has, however, lately begun to shift from the macrostructures of housing and from population level closer to individuals and everyday living (ibid.; Juntto 2010a, 33). There has been a growing interest in the lifestyles, housing preferences and housing choices of people.

Foresight on the future of housing consumption in Finland claims that the needs of residents are becoming more diverse in the future and that housing is increasingly perceived as an enabler of individual good life (Juntto 2010b; Lahti & Heinonen 2010, 254). There is, however, little research on the subject. Whether the lifestyles and housing preferences are actually differentiating or whether the demand for more individual housing is primarily brought about by a general rise of expectations due to economic progression is a subject of ongoing debate among the Finnish housing research community. Empirical research seems to indicate cohesiveness rather than differentiation of preferences (see Kyttä et al. 2010a, 93). On the other hand, as noted earlier, research on user needs and preferences tends to produce rather general and predictable outcomes. We know that people in general value qualities such as peacefulness and closeness to nature in their living environment, while we also know that these qualities connote different tangible attributes of the environment to different individuals. Thus, the connection of user studies to the planning and design of housing is weak.

The prevailing perception has been of Finland as a relatively homogeneous culture, where a detached house in a peaceful suburban setting close to nature has been considered the shared ideal of dwelling pursued by the majority. The dominance of this ideal is attested by several studies (e.g. Kortteinen et al. 2005, Juntto 2007), even if societal

and environmental changes have brought it under scrutiny. In housing and urban planning, the ideal is reflected as an implicit contradiction between the goal of high density, nurtured by planning authorities and other professionals by reason of sustainability, and people's (supposed) appreciation of a living environment with lower density (Lapintie 2010a, 42). Sari Puustinen (2010, 324) identifies independence and managing on one's own, trust in laws and norms, equality, and closeness to nature as the profound values in the Finnish housing culture that easily conflict with the public goals in housing.

The discussion on housing preferences in Finland has largely been anchored to the juxtaposition of urban versus suburban way of living as the decisive differentiating factor. Researchers have engaged themselves in detecting more fine-grained subgroups and "preference profiles" in regard to housing, yet for the most part keeping the dichotomy intact (Kyttä et al. 2010b; Vasanen 2010). As an example, Kyttä et al. (2010b) present five distinctive groups based on the profiling of residents in two suburban areas (translations mine): active and outgoing "true urbanites", "withdrawers" who value peacefulness and privacy, traditional single-family-house-oriented "do-it-yourself people", car-driving "hedonists", and community-oriented "neighbourhoodists" who commit to their living area. Studies on housing preferences concentrating on house type, tenure, location in urban area, and qualities of the neighbourhood are looking at the "big scale" and "outside" of dwelling. There is little research about qualitative user needs and preferences concerning the "small scale" and "inside" of dwelling.

The notion of housing preference that is grounded in economics has been criticised as inadequate when investigating the relationship between people's housing wishes and dwellings as artefacts in the context of design and planning (Lapintie 2010a, 45). From the perspective of design, it seems justified to approach the processes of dwelling not so much as direct need satisfaction and rational decision-making than as complex everyday interaction of humans and the material environment, where people are seeking for congruence with the environment and where opportunities await for actualisation. Marketta Kyttä (et al. 2010a, 95–96) describes the connection between lifestyles and housing as a continuum where differentiation can happen on many levels: *lifestyles* related to one's identity give rise to more concrete *housing preferences* that influence actual *housing choices*, which set the stage for *everyday living*.

Kyttä, relying on Gibson's (1986) affordance theory, states that the experienced quality of the living environment is formed in interaction between the "ideal world" of

individual dreams and wishes, and the “real world” of perceived opportunities in the environment (affordances) (Kyttä & Kahila 2006, 15). The interaction is reciprocal, as the available choices in the real world affect what people perceive as possible and desirable. Kimmo Lapintie (2007) has contemplated the notion of modality as an approach to architecture, urban design and planning practice. He suggests “[t]he addition of the element of *possibility* to that of reality and materiality, as well as to that of actual experience” in a theory of space (*italics mine*). This would mean understanding housing as object of design more in terms of the activities and possibilities of change that it opens for people. Lapintie (2010a, 44) has also noted the ultimately tragic nature of housing desires, bound to be unfulfilled amidst the inescapable realities of the housing market.

Demographic changes, such as ageing of the population, changing family structures, urbanisation, immigration, and transformation of work create demand for new housing solutions as well (Juntto 2010b, 270–276). The share of one-person households in Finland, for instance, has grown from 30 to 41 per cent during the last 25 years<sup>3</sup>. The growth of private wealth makes resources available for use in housing, and the increase of leisure time may raise the importance of dwelling and willingness to invest in it. At the same time, income polarisation and the debt equity ratio of Finnish households are growing, as is the price of housing especially in larger cities. (Juntto 2010b, 279.)

One driver towards more diverse housing is the understanding of the significance of housing as a regional competitiveness factor, the underlying idea being that the “creative class” essential to success in the knowledge economy can be attracted to an urban area by providing housing that meets its demands of individuality and experiential living. According to a study on the housing preferences of design and information technology professionals in the Helsinki region, profession seemed to give some explanation of housing choices: both professional groups were oriented towards the city more than Finns on average, but design professionals preferred more the inner city and information technology professionals the suburbs (Ilmonen et al. 2000). Another study (Hirvonen 2010), looking at the living of professional groups in larger Finnish cities, found out that senior specialists and managers are overrepresented and industrial workers underrepresented in urban centres, while service, sales and care professionals are distributed relatively evenly. Apart from professions, academic attention in Finland has lately been directed at the residential needs and experiences of various “other” groups, such as seniors, children, persons with disabilities, immigrants, and single women.

3 .  
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## The individualisation and commodification of housing

The discourse on diversification of urban housing in Finland, the turn towards lifestyles in housing studies, and the commercial housing concepts and brands being introduced to the market all tell of increasing emphasis on individuality in housing. At the same time, they suggest new kind of marketisation and commodification of housing. The individual dwelling is being brought to global consumer culture as a desirable lifestyle product among other products. To understand the driving forces that are shaping the dwelling product and its design, it is necessary to relate to the broader late-modern conditions within which it evolves. Due to the individualisation of the society, people's lifestyles and housing preferences may be increasingly diverse. At the same time, technology is penetrating the domestic space and digitalisation of design and manufacturing is enabling more flexible production. Turn towards users as active co-creators of products is transforming the traditional hierarchies of design. These changes challenge the current paradigm of housing production. Anna Klingmann in her insightful book *Brandscapes* (2007, 306) reflects on the implications of the individualisation process to housing:

*As the progressive individualization of lifestyles constitutes a fundamental shift in the contemporary economy, housing needs to be liberated from its modernist stigma, from standardization and unilateral equality, and must retool its image as a differentiated 'brandscape' – as a comprehensive lifestyle platform, coded with a careful selection of programs and iconographies that correspond to the specific needs and aspirations of different user groups.*

The individualisation of society as described by German sociologist Ulrich Beck (Beck & Beck-Gernsheim 2002, 22–29) manifests itself in increasing possibilities of lifestyle choices as a consequence of dissolving traditional social, cultural and economic structures. De-traditionalisation, cultural diversification, social fragmentation and the distribution of social risks to individuals are facets of the individualisation process. Individualisation does not mean freedom from institutions, but happens in accordance with other people and the society. Beck states that the “compulsion to lead a life of one's own and the possibility of doing it” has become

the fundamental collective experience of the Western world (ibid., 22). According to him, we are forced to become active creators of our own life in order to survive in the new social order. Reflexive construction of lifestyles and constant demand for creativity and innovation are signs of this, facilitated by the global economy and media.

Anthony Giddens (1991, 189–201) argues that late modernity involves distinctive tensions on the level of the self. One is between unification and fragmentation. As individuals face an ever-growing amount of choices in many areas of life and as the experiences become increasingly mediated, sustaining a unified self-identity becomes a challenge. Another tension is that of *personalised versus commodified experience*. Giddens describes commodification<sup>4</sup> as a process where lifestyles become brought under the standardising impact of commodity production and where therefore “the project of the self becomes translated into one of the possession of desired goods and the pursuit of artificially framed styles of life”. Continuous consumption under the domination of capitalistic mass markets, following the seductive narratives suggested by them, becomes a means for the development of one’s self. In other words, “[m]arket-governed freedom of individual choice becomes an enveloping framework of individual self-expression” (ibid., 197).

Commodification entails packaging and distribution of aspects of lifestyles according to market criteria. Plurality of choice and resulting constant unfulfilment of needs are indispensable to the continuity of the system. Consumer culture feeds a feeling of personal inadequacy in the face of the modes of life presented as desirable by mass media. The idea of the diversity of needs itself is thus a product of the market system. Giddens argues that in this kind of consumption appearance value and conformity within chosen lifestyle outweigh the use value of goods. Yet there are ways that counteract commodification. People freely discriminate information provided by the market system and interpret it in their own terms. Space, claims Giddens (ibid., 200), is one realm that partly resists commercialisation and standardising influences. The built environment takes largely decommmodified modes due to the active role of individual agents within it. This would suggest that the dwelling space after all is not very susceptible to commodification.

The emphasis on individuality in housing is also inherent to late-modern consumer society, where products are becoming more non-material and even material products may predominantly rely on sign value (Lash & Urry 1994, 15). This implies the aestheticisation of goods and consumption.

4.

Commodification (in Finnish, *tuotteistuminen* or *tavaraistuminen*) means the process whereby goods and services that were formerly used for subsistence purposes are becoming bought and sold in the market (“commodification”, Oxford Dictionary of Sociology 2009). Note the distinction to *commercialisation*, the introduction by a company of a new product to the market (Kotler et al. 2008, 986). I use the word *commodity* in a broad meaning, referring to the economic and market dimension of the dwelling product.



Aesthetic reflexivity, as defined by Lash and Urry (ibid., 316) means “making choices about and/or innovating background assumptions and shared practices upon whose bases cognitive and normative reflection is founded”. This is demonstrated for instance by conscious and creative construction of lifestyles through consumption. Lash (1994, 160) presents several forms of individualised consumption: consumption can remain individualised, be regrouped as niche markets and lifestyle communities, become driven by status competition, turn to creativity and romanticism, detach itself from the habits of the community, seek for spectacle and sign value, or emphasise calculating rationality. Increasingly specialised consumption necessitates flexible production, where companies produce smaller batches of a given product, but widen the selection of products on offer. As a consequence, the role of design and the design process in value creation are becoming more important. (Ibid., 119.)

Pine and Gilmore (1999) have recognised the transition towards a global “experience economy” where technology, competition and growing expectations of consumers push the commoditisation of previously undifferentiated goods. German sociologist Gerhard Schulze (2005, 417–418) discusses the dynamics of the experience market in his book *Die Erlebnisgesellschaft*. He states that the search for fulfilment of experiential goals has led to the emergence of a market that is characterised by interaction between producers and consumers of experiences. In the experience market, the rationales of supply and demand react to each other, leading to rationalisation of experience, that is, the increasing subordination of everyday life to the capitalist logic. This is manifested as the growing experience-orientedness of products, de-regionalisation of markets, corporatisation and concentration, and segmentation of social milieus (ibid., 444). Schulze (ibid., 450–451) describes how producers aiming to attract certain clientele endow products with superficial cues that correspond to certain aesthetic schemata. Products are stylistically coded along simplified classifications recognisable to customers. Design and advertising play a major role in creating the associations. Aesthetic schemas help people to navigate in the market and to establish personal connections to products. On the other hand, they serve the standardisation of lifestyles along the ends of production. The experience market thus undermines the leverage of individuals, while at the same time giving rise to internally motivated consumption emphasising the subjective meanings of products.

Schulze (ibid., 431–445) suggests that the rationalisation of experiences involves a number of strategies



employed by consumers and producers. The strategies of the two actors correspond to each other (Figure 1). Consumers use the strategies of *correspondence* (the establishment of connections between own supposed needs and matching products and affirmation of them through consumption), *abstraction* (the development of general pre-sets that enable rationalisation and automatisisation of consumption), *accumulation* (the continuous collection of new experiences), *variation* (the search for product variety within limits of own tolerance), and *autosuggestion* (the adoption of socially enforced presumptions to guide consumption). Producers respond with *schematisation* (the semantic coding of products to meet the aesthetic schemas of specific submarkets), *profiling* (the adjustment of product images to symbolically differentiate them from competing products), *modification* (the generation of product variants and new product generations to keep consumption going), and *suggestion* (the provision of consumers with messages that help them in positioning the products as part of their subjective meaning structures). The actors thus work together, supply feeding demand and vice versa. The relationship is asymmetrical, as it is usually the producers who attune themselves to the supposed demand. I will later examine how the designable components of the dwelling product serve this process.

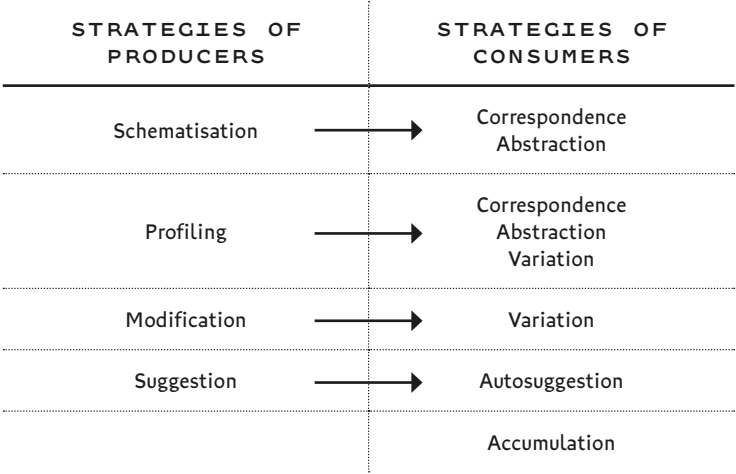


FIGURE 1. Correspondence of the strategies of producers (experience providers) and consumers (experience demanders) in the experience market (adapted from Schulze 2005, 445).

Dwellings are commodities in the consumer society, but it is arguable to which extent aesthetic and lifestyle related issues explain actual housing choices, which are usually understood as being guided by constraining factors such as location, price, size, and building type, and basic needs

such as conformity and belonging. Several family members also jointly influence housing decisions. The growing importance of housing as expression of identity and means of personal fulfilment is, however, stressed by some scholars (e.g. Clapham 2005). Especially the interior of dwellings is an area where signs of reflexive consumption can be detected (Gram-Hanssen & Bech-Danielsen 2004, Baudrillard 1996). The interior space, furnishings, pieces of furniture and objects of the home are important means for expressing one's identity, taste and social status. They are also the elements of the dwelling that the occupants can most easily control.

Popular media such as interior design magazines is imposing dwelling into the realm of consumer culture as the ultimate lifestyle product. In Finland, the aesthetic aspect of consumption is evident in market-oriented housing, where many customers demand individual modifications to their dwellings. It should be added that consumption in the domestic sphere happens on many levels, from housing acquisition to home improvement, energy use and daily consumables. Shove and Warde (1998) point out that while part of domestic consumption may be conspicuous (maintained by social comparison, creation of self-identity, mental stimulation and novelty, aesthetic matching, etc.), there exists a considerable amount of "inconspicuous" ("routine, pragmatic, practical, symbolically neutral, socially determined, collectively imposed, jointly experienced, non-individualised") consumption within dwellings that is revealed for instance by looking at the use of its various utilities and appliances.

#### 1.4

## The focus and objectives of the study

The dissertation aims at critical examination and understanding of dwelling as a designable product that through its material and other experienced properties mediates between the realms of users (everyday living) and industrial production. The study approaches dwelling as a composite, systemic artefact in the context of design.

The term *dwelling* instead of the perhaps more obvious *housing*<sup>5</sup> is used for framing the focus of the study for several reasons. The notion of dwelling emphasises the point of view of individual residents (the small scale and "inside" of built environment) as opposed to housing as large-scale urban

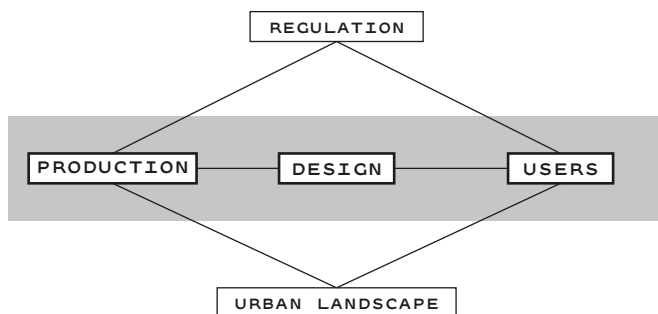


FIGURE 2.  
The focus of the study within the housing system. Public regulation and intervention to housing as well as topics related to the built urban landscape are left outside of its scope.

or societal phenomenon, as it is often examined in the fields of architecture and housing studies. As defined by Habraken (2000, 60): “What we call a *dwelling* is that part of the built environment defined by the act of settlement. While *room*, *house*, and *apartment* indicate particular forms, these become dwellings when actually inhabited”. From the perspective of residents, dwellings as physical wholes and commodities comprise inherently recognisable entities for study. Moreover, the word dwelling denotes both a tangible artefact (noun “a dwelling”), and a human process (verb “to dwell”), containing within itself the reciprocity and inseparability between everyday living and its material environment that is at the heart of the research problem.<sup>6</sup>

In the study, people who occupy dwellings are perceived as *users* rather than as residents, consumers or customers, even if those terms are also used when appropriate. By user is simply meant a person who interacts with the dwelling in everyday living. A user need not be the owner of the dwelling but can be a visitor or even a service provider. Despite its somewhat technical tone, the term user is justified because it emphasises the interaction of people and artefacts and renders them as active agents. The study focuses on users’ needs and experiences in relation with specific designable attributes of dwelling. The notion of user also connects to the dissertation’s background in user-centred design research, learnings of which it seeks to transfer to the field of housing.

Despite their inherent locatedness and singularity, industrially produced dwellings seem increasingly similar to other mass products. Housing developers seek to attract individual consumers by differentiation in the market and by the personalisation of products, while at the same time striving for standardisation and seriality in production. From the perspective of residents, dwellings can be seen as bundles of properties or capabilities that combine as enablers of everyday living and as means of personal fulfillment. Residents also make use of various strategies for appropriating the

5.  
For a distinction between *housing*, *dwelling* and *home*, see Lawrence 1987. I will avoid using the term home because it refers primarily to the non-material emotional and socio-cultural aspects of dwelling that are outside the scope of the study. Jim Kemeny (1992) has promoted the term *residence*, arguing that it directs attention to the dwelling as home, but within its locational context. This term has been adopted by some housing researchers representing the social constructionist approach (e.g. Paadam 2003).

6.  
The noun *asuminen* in the Finnish language can be used for both the act of dwelling and of housing (the dwelling, however, is *asunto*). The term is used ambiguously in my Finnish sources.

dwelling product to their needs. Housing design in a situation characterised by individualisation and commodification poses new challenges for architects and designers.

The dissertation begins with the hypothesis that dwellings, as artefacts produced by the housing industry, experienced by people, and conceptualised by architects and designers, constitute *products* in a wider meaning of the word than mere architectural constructions, technical assemblies or commodities in the market. In light of the developments described in the introduction, dwelling appears to have an artefactuality that does not fit within a conventional architectural or technical definition of dwelling, but does not seem entirely explainable in terms of social sciences or other disciplines such as marketing studies either. This suggests a need for the reconceptualisation of dwelling as artefact that would better acknowledge its systemic, composite nature. This study is an attempt to reveal, describe and argue for this “productness” of dwelling.

Approaching dwelling as a product means recognising it as a hierarchically organised (systemic) artefact that is embedded in the society and is intentionally devised (Simon 1996, Habraken 2000, Lawrence 1987). The notion of product should here be understood broadly as in the context of *product design* rather than in a limited industrial or economic meaning. In the case of housing, the product approach emphasises the inclusion of other designable aspects in addition to architecture to the definition of dwelling as artefact. This would imply a holistic understanding of the dwelling as a product (a “thing”) comprising the architectural space, furnishings, home technology, domestic appliances and other consumer products as well as services supporting everyday living. Such extended notion of product allows the examination of dwelling in its full complexity and yet as artefact in the framework of design. It is also justified from the viewpoint of residents. It seems evident that components of dwelling experienced by people as valuable extend beyond the scope of architectural design. The user and his or her everyday living should be seen as the integrative factor that connects various elements of the dwelling product into a coherent whole. Here needs to be added the distinction in Marxist philosophy between space as a product (a technical-economic outcome of the capitalist production system) and space as an *oeuvre* (an always unfinished “work” in process that is actively used, lived in, given meanings and transformed by people; e.g. Lefebvre 1991). I wish to fully acknowledge the latter aspect of dwelling and include it within my definition of dwelling as product.

Methodologically, the study explores the validity of theoretical approaches originating from (user-centred) product design research in the field of housing. Donald Schön (2001, see also Steadman 2008, 98) has described how new ideas and inventions emerge from *displacement of concepts*. The removal of an idea, a word or an artefact from its habitual context and transferring it to some novel application can lead to the formation of entirely new hypotheses. The dissertation employs a strategy of artful displacement (misuse, even) of the notion of product. It sets to explore whether the transferral of ideas and models concerning products from the context of design research and related disciplines to the context of architecture and housing can reveal some facets of dwelling as artefact that elude the customary academic and professional frameworks through which it is inspected.

The study seeks to contribute to a *designerly explanation of dwelling* that draws on the established architectural, technological, economic and social ones, complementing them with insights on what user-centred design could mean in the case of housing and on the potential role of design in the differentiation of the offering of housing. The research approach, characterised by holisticity and solution-orientedness, is anchored to the tradition of design research where the object of design is usually in some way present (Cross 2007). The research operates notwithstanding of the existing design professions and present tasks in the residential design process, seeking to contribute to general design theory on housing. Thus, the study participates in the discourse in the design field about the expansion of the object of design and the repositioning of design in society (Buchanan 2001, Keinonen 2009).

In the study, design is understood as primarily *professional* activity in the context of industrial housing production. Professional design is characterised by a need for specialist knowledge, interdisciplinary communication, and a freestanding abstract definition of the product that comes before the production proper (Östman 2005, 216). The housing system is seen as a loose network of specialised professionals who participate in the definition of housing and dwelling as artefact in its different scales and phases of emergence. This covers the practices of urban planning, architecture, interior architecture, furniture design, product design, systems and interaction design, engineering design, as well as other design activities that contribute to dwellings as products and to their use, such as residential product development in companies. Even design research that generates schematic

models and conceptual solutions is seen as one form of professional design activity. Participatory design where users are directly engaged in the design process is not in the focus of the study. It rather seeks to explore ways how user experiences can be translated into innovative designs by designers and other experts. The study commits to a definition of design as value search and catalyst for human transformations.

The study particularly addresses *conceptual design*. Conceptual design or concept design precedes actual product specification. It does not aim at direct implementation but operates on a more abstract and strategic level, working with new ideas and general principles or guidelines for what should be designed. In industry, conceptual design can be utilised for product development, for innovation, for creating a shared vision, for enhancing the competence of the company or for expectation management towards the customers. (Ulrich & Eppinger 2004, Keinonen & Takala 2006.) In architecture, conceptual design comes forth in a more open-ended meaning. Conceptual design is of key interest to the themes of the dissertation because of its mediative and generative capacity. In this context, it seems justified to perceive the overall development of housing as an evolutionary process, where dwellings as adaptive artefacts grounded in precedent transform by mechanisms of variation and selection collectively imposed by the housing system, including designers and users (Steadman 2008, Marshall 2009, Ziman 2000). In the evolution of housing, conceptual and strategic design can act as “code” that guides the adaptation of artefacts along chosen ends, such as user value.

The dissertation is an exploratory case study where the research task is twofold. Firstly, the study aims at producing empirical knowledge on the consistency of dwelling as product and on the relationship of that product to its user. The second aim is to examine the composite dwelling product as an object of design and in this way provide input to housing design and production.

The research employs *theory-based analytical instruments* for revealing different dimensions of the “productness” of dwelling. These combine theories about the hierarchic structure of the built environment (Habraken 2000, Brand 1994) with definitions of product in design research and marketing studies. A tentative preposition of the study is that dwelling as product can be defined as a set of designable elements on different levels of built environment that combine to deliver an essentially immaterial benefit or value to user. Looking at housing production, it would seem that the dwelling product is “lengthening” (users are increasingly included in the

design and production phase of dwellings and producers are becoming interested in the use phase), “broadening” (ever new properties and components of dwelling are becoming subject of commodification and intentional differentiation), and “deepening” (collaborative and flexible production methods at least in principle enable users to influence the structures of mass produced housing and dwelling more profoundly than before). This situation opens up new demands and possibilities for design.

The practical focus of the study is in new industrially produced urban housing in Finland, which typically means multi-storey blocks of flats. As noted earlier, this type of housing has been identified as particularly problematic when concerning the qualitative diversification of the offering of housing. Main emphasis in the study is on market-oriented owner-occupied housing built by private housing developers and construction companies, because that is the sector of housing where commodification and the demand for diversity are most markedly demonstrated. A complementary perspective is provided by user interviews that originate mainly from residents of rental and right-of-occupancy housing. The dissertation is grounded on qualitative data that has been collected as part of several applied research projects realised in the Helsinki region between the years 2006 and 2009 (see Appendix 1).

**2**

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## 2.1

## Positioning the study

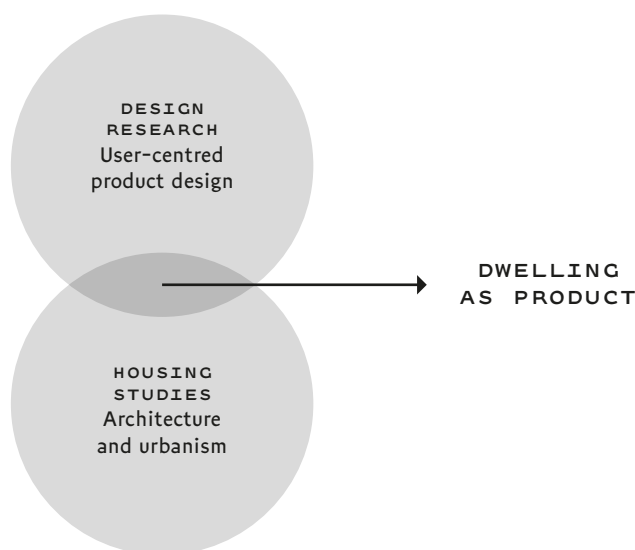


FIGURE 3.  
The positioning  
of the study.

The study is situated in-between design research and housing studies (see Figures 3 and 4). It connects two design disciplines, product design and architecture. The theoretical and methodological premises are in design research, knowledge and insights of which are applied to the context of housing. The main research domains in design that the dissertation draws on are user-centred design, conceptual design, and general design theory, in particular that addressing systems and design as evolution. Regarding housing, the study builds on architectural research on urban housing. It also relates to housing studies and urban studies grounded in social sciences. Additional insights are drawn from marketing research and science and technology studies. The anticipated audience of the dissertation are academics in the disciplines of design, architecture, urban planning and housing studies, as well as policy-makers and professionals within the housing system, such as architects, planners and residential developers.

Among theories and definitions of design, the topic of the dissertation has led me to consider one that, firstly, recognises the full complexity of dwelling as an artefact that is deeply embedded in our social and material reality; secondly, is not limited to a specific task or profession within the housing system; and thirdly, emphasises design as catalyst of social

transformation. The general design theoretical approach of the study can be described as *systemic*. Industrially produced urban dwelling is seen as complex hierarchically organised artefact that results from human intervention, aims to satisfy human purposes, and is adapted to its environment. The approach is grounded on the work of Herbert Simon who in his influential book *Sciences of the Artificial* (1996 [1969]) lays foundations for a “science of design” that investigates the preconditions and goals of human invention (questions related to “how things might be”), thus distinguishing itself from natural sciences that aim to explain given phenomena (“how things are”). Consideration of the *contingent* as opposed to the necessary according to him is characteristic to disciplines dealing with the artificial, such as engineering, business and architecture. The idea of design is present here. Simon defines design broadly as “devising artefacts to attain goals” or “sequences of actions that lead to possible worlds satisfying specified constraints”, stating that “everyone designs who devises courses of action aimed at changing existing situations into preferred ones”.

According to Simon (*ibid.*, 6), the adaptation of artefacts to goals involves appropriation of the inner substance and organisation of the artefact itself to the outer environment in which it operates. The task of design science should be to study this adaptation of means to environments. To Simon, theory of design is theory of *search*. The devising of artefacts involves a search for solutions that sufficiently satisfy intended purposes within an environment. Following Simon’s ideas, I perceive dwelling as an adaptive goal-oriented artefact that is moulded by its environment. This also suggests an evolutionary view to the development of housing. The evolutionary analogy in architecture and design has been discussed, among others, by Philip Steadman (2008 [1979]). The evolutionary approach emphasises the influence of precedents in the development of artefacts. This suits well to housing, where both the socio-cultural model of dwelling and dominant dwelling designs with historical lineages of descent are being replicated.

In the field of design research, the dissertation connects to the discourse on the expansion of the object of design, repositioning of design in society and production systems, and concurrent professional change (e.g. Buchanan 2001, Keinonen 2009). The study draws on the research on user-centred and collaborative design (e.g. Norman 1988, Keinonen 2010, Hyysalo 2009), applying methods of user-centred design research to the field of housing. It also addresses conceptual design (e.g. Jansson 1990, Keinonen & Takala 2006) and strategic design. Regarding housing studies, the work is grounded on architectural theories on the hierarchic

structure of built environment (Habraken 2000, Brand 1994). It connects to the broader discourse in social sciences about commodification and the nature of commodities in late-modern society, specifically addressing the role of housing in late-modern conditions characterised by individualisation, differentiation of lifestyles and aestheticisation of goods and consumption (Klingmann 2007, Schulze 2005, Beck & Beck-Gernsheim 2002, Lash & Urry 1994, Baudrillard 1996). A further area that the study investigates is the relationship between residents and dwellings, in particular the users' active and creative strategies targeting the dwelling product and value creation during everyday living (de Certeau 1984, Hill 2003, Shove 1999).

The reader may question a seeming omission of *space* and *place* in a study concerned with architecture. Rather than as denial of the fundamental spatiality and locatedness of dwellings, this should be taken as an intentional reframing that shifts the focus of inspection towards dwelling as a generic, component-based artefact that comprises elements beyond architecture. This brings it closer to other industrial products and enables its examination using theories and methods borrowed from design research. My choice of framing has also left out the discussion on type in architecture. The approach is justified by the focus of the study on dwelling as a duplicable mass-produced commodity. It is also relevant in terms of open building and mass customisation as emerging design and production strategies. There exists a considerable body of research on the experienced spatial and architectural quality of housing, unlike of its other designable properties. The decision not to consider dwelling primarily as a space or piece of architecture should, however, not imply a reductionist view, where dwelling as a whole would be explained by its individual components. I wish to acknowledge the emergent and holistic properties of dwelling, it being more than the sum of its constituent technical parts.

The dissertation contributes to the practical problem area of human-centredness and diversification of industrial urban housing in Finland by complementing the insights of housing studies and urban studies from the angle of user-centred design research. The study is qualitative and design-focused. Quantitative, statistical and regional questions in housing are left outside of its scope, as are issues related to housing policy, economics and real estate. The studied phenomenon is positioned in the historical continuum of housing in Finland (Juntto 1990, Saarikangas 2002, Hankonen 1994). The study connects to previous research about housing preferences and needs in Finland (e.g. Juntto 2007, 2010a,

2010b, Kortteinen et al. 2005, Kyttä et al. 2010a, 2010b, Lapintie 2010a). It also relates to the body of research on housing concepts, residential product development and commodification of housing (e.g. Norvasuo 2008, 2010), as well as to architecturally inclined studies on new housing types and forms (e.g. Krokfors 2006, 2008). The dissertation addresses the identified gap in housing studies between research on residents' needs and the design of housing.

FIGURE 4.  
Main research discourses  
that the dissertation  
connects to.

DESIGN RESEARCH	HOUSING STUDIES
Systemic and evolutionary theories of design (Simon, Steadman, Marshall, Ziman, Geels)	Hierarchic structure of the built environment (Habraken, Brand)
Expansion of the object and position of design (Buchanan, Keinonen)	Individualisation and commodification of housing (Klingmann, Schulze, Beck & Beck-Gernsheim, Lash & Urry, Baudrillard)
User-centred and collaborative design (Norman, Keinonen, Hyysalo)	Strategies of residents, value creation during use, users as active and creative individuals (de Certeau, Shove, Hill)
Conceptual and strategic design (Jansson, Keinonen & Takala)	
	THE FINNISH CONTEXT
	Modernisation and the history of urban housing in Finland (Juntto, Saarikangas, Hankonen)
	Housing preferences and needs (Juntto, Kortteinen et al., Kyttä et al., Lapintie)
	Housing concepts, novel housing solutions (Norvasuo et al., Krokfors)

2 . 2

Research questions

Even if implications of the ongoing social, economic and technological changes to housing and dwelling have become a subject of academic interest in Finland, there is little research on the impact of these changes to housing as a composite designed product. The phenomenon of commodification of housing has not been properly addressed in the context of housing architecture or design theory. There are identified gaps of knowledge as well as breaks between actors within the housing system. The academic discourse on user-centredness of housing in Finland is vague in respect of what user-centredness means in the first place, which specific attributes of housing matter to individual users, and how users are, can,

or should be represented in the design process. There is a need for integration between diverse knowledge within the housing system and for a more holistic approach to dwelling as an object of design. The study seeks to contribute to a better understanding of these topics by utilising a research methodology that combines approaches from user-centred product design research with architecturally oriented housing studies. The main research question is:

*How to understand dwelling as a product and object of design?*

This rather broad topic is approached from three distinctive perspectives: those of production, users, and design. The two first, “vertical” perspectives both constitute one main section of the dissertation, both containing their own sub-questions and a real-life case. They are supported by qualitative empirical data (see Figure 5). The design perspective as a “horizontal” theme runs through the study and ties the empirical findings together. The viewpoint of design is emphasised in the theory part as well as in the conclusions of the study.

#### PRODUCTION PERSPECTIVE: THE COMMODIFIED DWELLING

I will give an overview of the commodification of housing production in Finland with a focus on housing concepts as mediation between production, users and design. I will analyse how duplicable housing concepts in the market are constructed as differentiated composite products in relation to customers and the hierarchy of built form. I will also look at how users and design are represented in the current residential product development process.

#### USER PERSPECTIVE: THE EXPERIENCED DWELLING

I will examine how dwelling as product is defined by users in everyday living and what kind of active and creative strategies they employ for adapting the dwelling product to their needs and preferences. I will also discuss how the notion of user is constructed into dwelling and explore the relationship between user experience and the designable attributes of dwelling.

#### DESIGN PERSPECTIVE: THE CONCEPTUALISED DWELLING

The study at large deals with dwelling as a design problem. The aim is to increase the understanding of dwelling as a systemic product and to open up the implications of that to housing

design and development. Throughout the dissertation, I will explore ways of (re)conceptualising dwelling as an object of design. I will also discuss the role of conceptual and strategic design in user-centred diversification of housing. In the conclusion chapter, the findings of the two other perspectives are reflected in the context of design.

The dissertation has both scientific and practical objectives. It aims at theoretical reflection of some aspects of the phenomenon of commodification of housing as it is manifested in Finland. Another objective is to increase the understanding of dwelling as a composite product and as an object of design. As a practical aim, the study seeks to contribute to the real-world problem area of user-centred design and development of industrially produced urban housing by providing empirically grounded knowledge about the relationship between residents and the designable attributes of dwelling. The study will also contemplate the potential of conceptual design in diversification of housing and produce preliminary design ideas that can be utilised in the field.

## 2 . 3

# Research strategy

The systems approach to dwelling has guided my methodological choices. I have sought to employ a research strategy that recognises dwelling as a complex human-made product that is deeply rooted in precedent and embedded within the everyday. Social scientists have noted the salience of housing in social structure (Kemeny 1992, 153). In the same way, housing as a physical artefact infiltrates the hierarchy of the built environment (Habraken 2000). Like other technical objects, housing is composite, heterogeneous and physically localised. This suggests the adoption of a research strategy that allows the examination of the “whole” of dwelling – dwelling as a product situated in its local context, and in interaction with users, designers and other actors contributing to its emergence. Here, a reference can be made to technology sociologist Madeleine Akrich (1992, 208–209) who states that technical objects define a framework of action together with the actors and the space in which they are supposed to act. She argues that when interested in such objects, a researcher “cannot be methodologically satisfied with the designer’s or user’s



viewpoint alone”, but has to go back and forth between the two, figuring out how they interact with each other and meet in objects. To understand dwelling as product one must not only look at housing design and the housing industry but specific, singular dwellings in use.

The dissertation is constructed as a *qualitative case study* where the research topic (dwelling as a systemic, designable product) is cross-examined from multiple perspectives, seeking to converge as a critical overall understanding of the studied phenomenon. Investigation from each perspective is anticipated to reveal different facets of the ‘productness’ of dwelling. The study comprises *two real-life cases* grounded on empirical material. The first case (representing the production perspective) is provided by duplicable housing concepts realised in Finland. Here, focus is on dwelling as a commodity and differentiated product in the market. The housing concepts as study material are complemented by interviews of housing developers. The second empirical case (representing the user perspective) focuses on the everyday user experience of dwelling as manifested in a user study conducted with 44 residents. The cases provide two separate windows to the research topic that are tied together by theory and the analysis methods.

Case study has been identified as a useful method for understanding complex social phenomena in real-life contexts (Yin 2003). The method is commonly used in social sciences and in design research. Robert Yin (*ibid.*, 13) defines case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”. He describes case study as a comprehensive research strategy covering the logic of research design, data collection techniques, and specific approaches to analysis, and suggests systematic procedures for conducting case studies. Others (Laine et al. 2007) see case study in a more open meaning as a general methodological approach that emphasises the value of the particular over quantifiable generalisations. Instead of gathering a large representative data that is analysed statistically, case study focuses on one or more particular cases or instances of a phenomenon, aiming for its in-depth portrayal.

What distinguishes case study from many other methods of scientific inquiry is the central role of theory in conducting the research. A case study as outlined by Yin (2003, 28–29) benefits from prior development of theoretical propositions. Due to the complexity of real-life cases and lack of established formulas for conducting case studies, it is

difficult to predict beforehand what specific information will be relevant in a case. In order to focus the scope of the inquiry, the researcher needs to build a tentative theoretical framework that acts as a “blueprint”, guiding and integrating the research process from first hypothetical prepositions to data collection, analysis and interpretation of findings. Yin sees case study as an iterative process where theoretical positions are constantly revised on the basis of empirical evidence, leading to gradual building of an explanation on the research topic. According to him, the research design itself therefore necessarily embodies a preliminary “theory” of the subject of investigation.

An important further distinction concerns the generalisation of results in case studies. Case study research relies on analytic as opposed to statistical generalisation, looking for inferences on the level of theory. The results are generalised to the theoretical propositions of the study, not to populations or universes. In analytic generalisation, previously developed theory is used as a template with which to compare the empirical results of the study. Cases can be replicated to corroborate or contrast the theory. The theoretical framework becomes the means for generalising to new cases. (Ibid., 47–49.) The credibility and validity of a case study can be enhanced by triangulation, i.e. cross-examination of the research topic using multiple methods and sources of evidence. In the dissertation, I have utilised data triangulation (collection of information about the same phenomenon from different sources) and triangulation on the level of theory (approaching the same data from multiple theoretical perspectives). The same theory-based analysis frameworks have been used in both cases. I have also aimed at cross-case synthesis by combining the results of the cases in the conclusion part (Chapter 6).

The overall methodology of the dissertation is grounded in design research, which by definition deals with the objects and processes of design. Methods in design research are often practice-oriented, explorative and experimental. Qualitative applied research focusing on the experiences of a small group of individuals is typical in the field. This type of research is often theoretically weak. I have aimed at cultivating designerly methods of inquiry also on a more theoretical level. I have sought to employ systematic research methods that would contribute to design theory, addressing, in the words of Nigel Cross (2007, 124), “forms of knowledge peculiar to the awareness and ability of a designer, independent of the different professional domains of design practice”. The central strategy in the study has been the shifting of the notion of product from the context of product design to the context

of architecture and housing, resulting in new understanding (reframing, reconceptualisation) of dwelling as a product and object of design.

## 2.4

# Data and analysis methods

The empirical data in the study consists of three sets, two of which inform the production perspective (the first real-life case) and one the user perspective (the second real-life case) (see Figure 5). More detailed descriptions of the origins, content and analysis methods of the data are given in the respective chapters (Chapters 4.2.4 and 5.2.1).

The first set of empirical material comprises descriptions of *housing concepts* that are currently in the market in Finland or have been realised during the last decade. The selection has been limited to concepts for urban blocks of flats. Information about the concepts has been collected from various sources, such as the websites of the developers and other advertising and marketing material provided by them, descriptions of the concepts in popular and professional media, as well as previous research reports dealing with the topic (Norvasuo 2008 and 2010, Väliniemi et al. 2008, and Aaltonen et al. 2011). Some apartment buildings built according to the concepts have also been visited. Five housing concepts (*Aktiivikoti*, *BoKlok*, *PlusKoti*, *Neo-Loft* and *Loppukiri*) have been chosen for closer analysis using as criteria their relevance in illustrating different aspects of the commodification of housing.

The second set of data consists of three thematic *company interviews* conducted with managers who are responsible of housing product development in three residential development companies operating in Finland. The interviews concentrate on three main themes: the industry representatives' view on their customers and on the problematics of user-centredness in housing; their perception of housing as a product; and the current product development process in the companies. The interviews have also provided additional information about the housing concepts offered by the companies. They were conducted by the author in 2011.

The third data set comprises 44 semi-structured *user interviews* that were collected between the years 2006 and 2007 as part of applied research projects realised in the

University of Art and Design Helsinki's Future Home Institute (see Chapter 5.2.1 and Appendices 1, 2 and 3). The interviews originate from a series of user studies that were conducted utilising the probes method based on self-documentation by users (see Mattelmäki 2006). Other material provided by the probes such as descriptions of housing careers and photographs taken by the participants are also utilised in the dissertation. The aim of the user studies was to get a rich picture of the experiences of individual persons in the home environment. The participants originally represented six distinctive groups: persons with disabilities, immigrants, people having an "untypical" job (such as short-term work or shift work), single parents, residents of right-of-occupancy dwellings, and persons who had purchased a flat in a new high-end housing project in inner-city Helsinki. The probes method has originally been developed to provide inspirational knowledge about users into the design process. In the projects, the method was used in the context of applied research. The results of the user studies were utilised for developing design drivers and concepts related to various aspects of the living environment. In the dissertation, the data is re-approached from a more theoretical angle. The wide scope and richness of the interviews make them valid as data concerning the research question.

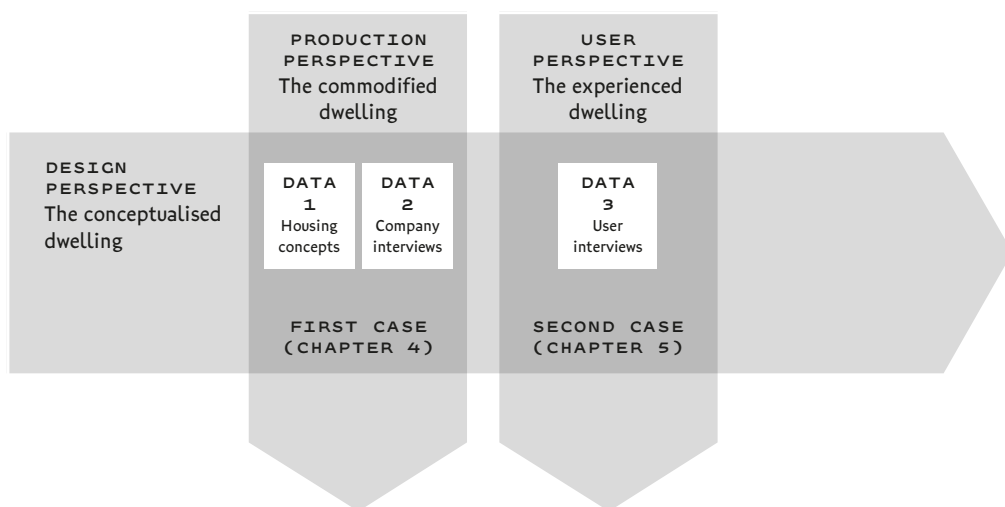
As additional material in the conclusion part have been used some *conceptual design examples* that have been realised by the author in applied research projects, partly in collaboration with others. They provide tentative reconceptualisations of dwelling as an object of design and illustrate alternative design strategies aiming at user-centred diversification of the dwelling product.

The material is primarily analysed on the basis of theory. In *theory-guided content analysis*, the concepts and frameworks for analysis are brought from outside the data. As a method, theory-guided content analysis begins with the formulation of a framework for analysis, informed by theory and previous knowledge of the researcher, and proceeds to classification and categorisation of the data according to the framework (Tuomi & Sarajärvi 2011). Theory and data are constantly compared, building towards a theory that fits the data. I have adopted theory-guided analysis as a general approach to data rather than as rigorous method. My analysis has been guided by theoretical hypotheses and conceptual models that have been formulated on the basis of research literature and other sources dealing with the problem area of the dissertation. The hypotheses have been tested and revised in dialogue with the data. I have utilised theory-based diagrammatic instruments for investigating different

dimensions of the “productness” of dwelling. The analysis instruments are presented in Chapter 3.4. They are grounded on writings on the hierarchic organisation of the built environment (Habraken 2000, Brand 1994), on definitions of product in marketing research and design studies (Kotler et al. 2008, Eger & Drukker 2010), and on evolutionary theories of design (Steadman 2008, Marshall 2009, Ziman 2000, Geels 2002).

I have followed various analysis tactics in the interwoven streams of data reduction, data display and conclusion drawing/verification (see Miles & Huberman 1994). Large part of the analysis has proceeded through close theory-informed reading and exploration of the data with sensitiveness to the research question. The material has been reduced by coding, displayed with the help of thematic matrices and affinity diagrams, cross-examined to discern regularities and differences, and given meanings and explanations in dialogue with theory. General propositions about the productness of dwelling are derived from specific case examples (the housing concepts and the user data). The theory-based instruments have been used as tools in the analysis, and the findings have been verified and tested against the theory. Guidance for interpreting the results has also been provided by my own prior expert knowledge. In places, quantifying diagrams have been used for displaying the data. Of the analysis tactics proposed by Yin (2003, 137), the process is closest to iterative explanation building where case study evidence is examined, theoretical models revised, and the evidence re-examined from a theoretical perspective. The study's reliability and validity is discussed in Chapter 6.4.

FIGURE 5.  
The three perspectives of  
the study and the data.  
The design perspective  
runs through the study.



## Research process and dissertation structure

The research has proceeded in an iterative and reflective manner. The main successive phases in the process have been the formulation of theoretical prepositions, selection and adjustment of research methods, collection of empirical data, theory-guided analysis of the material, and synthesis where the findings are summed up and brought back to the academic discourse. In practice, the process has been cyclical. The phases have overlapped and informed each other.

The study draws on applied research projects as a repository of data, knowledge and ideas. The projects originate from the author's career in a research unit focusing on user-centred development of the living environment (Future Home Institute at the University of Art and Design Helsinki). They represent practically oriented, solution-driven research activity conducted in the intersection of academia and industry, in cooperation with companies and other organisations mainly from the fields of housing development, construction and services.

The projects have provided a large part of the empirical material of the dissertation. Even more importantly, they form a personal trajectory of learning that has greatly influenced the premises and research questions of the dissertation. A reservoir of knowledge and ideas related to the topic of the dissertation has been accumulated during project activity that has not been properly brought into the body of academic knowledge before. The research has provided an opportunity to critically assess learnings and hypotheses originating from a practice of applied research in the field of housing. The user interviews originate directly from the applied research projects. Other parts of the research material have been collected during the dissertation process. More information about the projects and their relationship to specific data sets is given in Appendix 1.

The dissertation is divided into six main chapters. The introductory Chapter 1 describes the background, context and focus of the study. It gives an overall view of the large-scale societal developments influencing the demand and delivery of housing, with reflections to housing in Finland. The research questions, methods, data, and practical execution of the study as well as its positioning in the academic field are explained in Chapter 2. The theoretical premises of the study

are outlined in Chapter 3. It discusses the challenges faced by architectural design in present conditions, contrasting these with the expansion of product design and the possibilities opened by that to the design of dwelling. The chapter also offers a definition of conceptual design and the notion of concept. It concludes with presentation of the theoretical frameworks employed in the analysis. Breadth of scope of the theoretical domains addressed by the dissertation has suggested a structure where additional theory sections are distributed along the length of the study.

The central contribution of the dissertation is being developed throughout Chapters 4 and 5, in which the research question is approached with the support of empirical data from the two perspectives of production and use of dwelling. Both chapters begin with a “setting of the perspective” based on literature, proceed to theory-guided analysis and discussion of the data, and conclude by bridging the findings with the general argumentation of the study. Chapter 4 explores the commodification of dwelling as evidenced by current Finnish housing concepts and the developer interviews. Chapter 5 investigates the relationship between users and the dwelling product on the basis of people’s everyday experiences. The conclusions of the study are presented in Chapter 6, where the findings of the two empirical perspectives are brought together and discussed in the light of design, contributing to a new understanding of dwelling as product.

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UNDERSTANDING DWELLING AS a systemic product in the context of expanding design activity necessitates a closer look at its composition, the dynamics of its change, and the role of design in shaping it. The following section outlines the practical context and theoretical premises of the dissertation and opens up the design perspective to dwelling that runs through the study. It begins with an overview of the problematics of user-centred diversification of dwelling from the viewpoint on architectural design (Chapter 3.1). This is contrasted by the ongoing expansion of the scope and position of product design and the implications of that to the design of dwelling (Chapter 3.2). The next part (Chapter 3.3) gives a theoretical definition of conceptual design and of the notion of concept as it is manifested in various design disciplines. The section concludes with presentation of the key theoretical frameworks employed in the study and introduction of the theory-based instruments that have been formulated for analysing the data (Chapter 3.4).

## Challenges faced by architecture

### 3.1.1

#### THE FRAGMENTATION OF BUILDING

Due to social and technological change, the object of design and its position in production systems and in the society are changing. At the same time, design as activity is experiencing a shift towards collaboration and user-centredness. Designers also have to deal with an increasing demand for social and environmental responsibility. These changes are related to the overall shift of production in late-modern information society. The new production paradigm is characterised by reliance on information, aestheticisation of consumption, flexible specialisation of production, personalisation of products, collaborative production networks, and co-creation of value through the interaction of producers and consumers (Castells 1996, see Chapter 4.1).

Transition to this kind of production requires the integration of many actors and complementary innovations into a functioning whole. According to activity theorist Jaakko Virkkunen (et al. 2010, 32) this has meant a profound move towards more holistic thinking in activity systems. Emphasis in organisations and companies is shifting from separate functions and components to connections and interdependencies between them, from hierarchic, institutional “top-down” thinking to more open and collaborative “bottom-up” approaches, and from managing linear processes to partnership in complex interactive systems which evolve through contradictions and in which knowledge and expertise develop in dialogue. Key competencies in the new economy are strategic agility and ability to combine innovations from different fields. This underlines the importance of design and product development. (Ibid., 32–36.)

Specialisation of labour characteristic to modernism is evident in the case of housing delivery, where tasks have been divided among a large number of professionals each with their specific narrow expertise. John Habraken (2000, 229) notes how

*Architectural interventions now involve architects, engineers, and consultants for plumbing, heating, ventilation and air-conditioning, electric power and communication systems, landscaping, interiors, and so on. Legal, financial, and marketing strategies, implemented by yet other specialists*

*and committees, are continually coordinated within the design team. The ultimate project execution – building – is yet another process involving many different experts. Agents continually make judgments in ongoing dialogue.*

According to Steven Groák (1992, 3) this has led to fragmentation of communication and generation of diverse conceptual frameworks within the building process. Groák argues that even if building science has gathered an extensive body of knowledge about individual materials, components, technologies, and behaviours of buildings, it lacks an understanding of the holistic properties of buildings, meaning the “specific, unique, complex, sometimes known but not quantifiable” properties which only emerge in real-life buildings as confronted by practitioners and users. Groák states that “[a]s experience and study of buildings has gathered over the centuries, reinforced by the division of labour, our knowledge of the parts and our knowledge of the wholes have diverged”. He sees reconciliation between the wholes and their constituent parts as the central problem in building science, and stresses the importance of holistic *ideas* in the design and production of buildings. In design studies, Buchanan (2001, 7) points out the fragmentation as well and reflects on the potential of design to connect and integrate divergent knowledge.

Architecture is an essentially integrative discipline in its capacity to combine diverse physical elements into coherent spatial structures that resonate with basic human needs and intentions. Architectural scholars in the phenomenological tradition claim that modernisation has disconnected architecture from its roots in the human experience. Juhani Pallasmaa (2005) maintains that the principal role of architecture should not be to invent novelties but to reconstruct our fundamental bio-cultural and sensory experience of place and time. Kaj Nyman (1989) sees architecture as a socially and culturally grounded “language” for translating the human experience into material form; a language that is shared and that we all can inherently understand. Thus, architecture is giving social order an expression through physical order. Nyman argues that in modernisation, architecture has lost some of its communicative capacity as the design, production and use of buildings have separated. The language of architecture according to him has become foreign to many of us. Strengthening the link between (new) social and spatial orders would be an important task of architects in the late-modern society.

In present mass produced housing, architectural design is one subtask among many in developer-led projects. Separation of residential development and construction activities in large companies has increased central control over design decisions in housing projects (Sohlenius 2006). This is one reason behind the low appreciation and profitability of mainstream housing design to architects. Discussing the role of architecture in the experience economy, Klingmann (2007, 311) claims that the field has been divided into “commercial practices, which pride themselves on being consumer-friendly and which for the most part offer conservative solutions on tried-and-true formulas”, and “critical practices, which offer innovative design but attract few customers”. She proposes a more strategic role for architecture as a catalyst that can create authentic identities for people and places by taking experience rather than building as its object.

Leif Östman (2005) has analysed the “high” and “low” aesthetic cultures of architecture in his dissertation grounded in pragmatist philosophy. He attests the polarisation within design practice and knowledge. A small elite of “avant-garde architects” concentrate on artistic and conceptual projects, excelling in taste and innovation. The majority, non-artistic “mass architects” work in the commercial and popular realm, mainly producing drawings and documents in a repetitive manner devoid of intellectual processing. The two can also be seen as opposing modes that most architects are required to alternate between in their everyday practice.

As argued by Östman, the innovative potential of avant-garde architecture is highly important for the advancement of the field. Its largely implicit ways cannot be enforced by commercial means or by formal education, but “innovation asks for a strong avant-garde and an autonomous professional field, where the agents are forced to perform excellently in their practice by symbolic incentives” (ibid., 318). From the perspective of clients and users of architecture, this poses a problem. Their short-term interests, such as need for immediate functionality and avoidance of risks, and their aesthetic judgements based on popular, local frames of reference are inevitably being overruled by the aesthetics of the architectural avant-garde valued by professionals. To avant-garde architects, whose real audience are other architects, the expectations of the clients seem trivial. “By definition, design projects with a considerable client influence are located at the commercial pole. The avant-garde production has to put

form above functionality and client interests.” (Ibid., 149.) The artistically driven code of conduct in elite architectural practice is so powerful that clients cannot dismiss it if they want high-quality architecture. Questioning the status quo is interpreted as offence to the core values of the field. In this sense, the existence of architecture as a profession necessitates certain ignorance of the users.

Similarly, the commodification of architecture represents a threat to the dominant artistic ideology in the field. The professional elite disregards market-oriented housing architecture. Some of the criticism is justified. The subordination of architecture to the capitalist economy can undermine its human quality and socio-cultural sustainability. Overemphasising the taste of the clients and consumers can lead to populist architecture that is not viable in the long term. The need for architecture as art, capable of creating aesthetic experiences and connecting the social and the material in a way that goes beyond our immediate horizon of expectations, exists. As Christian Kühn (2005, 253) states: “The prerequisite is that architecture now and in the future not (or at least not primarily) be understood as a ware and a product, but rather as an artistic medium that critically reflects on the complexity of a specific situation including its social, ecological and economic aspects.” Insisting upon architecture as art should not mean denial of its position in the service of the capitalist system and the responsibility associated with that. As in all productive activity, architects need to solve the contradiction between the use value and exchange value of the product.

Östman (2005, 315–316) describes three types of architectural commissions: avant-garde commissions; ordinary architectural design commissions that ask for a robust design skill, but where the client puts less emphasis on avant-garde and more on accomplishing the complete solution regarding cost, construction, performance, functionality and architecture; and commercial projects, where there is a dominating interest in commercial success and where less efforts are spent on the architectural design. Most regular architectural work in housing projects would fall into the latter two categories. Östman sees the “commercial outskirts” of architecture problematic because of its disconnectedness from the innovative avant-garde. One can question, however, the extent to which housing architecture can be avant-garde in the first place. The design of apartment houses is basically about duplication and fitting together of variations of the few culturally established dwelling types so that the end product is economically viable. It can be argued that in mass produced urban housing the facade of the building is the sole medium for aesthetic expression of the architect.

Understanding architecture as part of mass culture and a consumer product challenges the traditional role of architects and requires new kind of mediatory skills. In the transition towards collaborative production, a critical challenge for architects is how to share design authority with other actors without losing control of the whole, and so that the aesthetic standards of the field are maintained. Östman argues that change can only come from developing the competencies within the profession itself. He states that the architectural design process requires interaction of “avant-garde designers” with non-linguistic artistic reasoning, “designers” with a robust practical design skill, and “design managers” who understand the design process on a linguistic level and are capable of mediating between the parties (ibid., 301). Rather than seeing the design of a building as the task of a lone architect, it should be seen as co-operation where also the client and other actors exercise creativity and aesthetic judgement. This requires the conjunction of a variety of points of view that are often based on a limited understanding of the whole. It would be the architect’s role to act as a facilitator who ensures that “others understand the whole and contribute to its unified aesthetic qualities” (ibid., 322).

Umberto Eco (cited by Dreyer 2010, 59) argues that architecture’s potential for innovative and behaviour-modifying design is very limited because of its inescapable reliance on familiar and conventional (semantic) codes. Architecture is about “fixed, codified solutions that only have to be recombined and modified so as to give its users the impression that their needs have been fulfilled by means of architectural measures”. Eco sees architecture more as service or mass communication than art. He also contemplates the possibility of architects going beyond or deconstructing traditional codes, or discovering new codes.

### 3.1.3

#### DILEMMAS OF PARTICIPATORY DESIGN IN ARCHITECTURE

In the case of design for dwelling, the discourse about users and design collaboration is fed by two traditions: participatory approaches in architecture and planning, and user-centred design research in the field of product design. Participation became a concern of the architectural avant-garde in the 1960s as a reaction to social problems surfacing in modernist environments. Giancarlo De Carlo (2005) laid foundations for the participatory movement in a polemic text that was originally published in 1970. His central argument was that

architecture as a specialised profession, with power mandated by the elite of the society, is merely preoccupied with the “how” of building instead of asking more profoundly “why” things are done as they are. This has led to a lack of credibility of architecture among its users. De Carlo suggested a move from authoritarian and repressing planning “for” users to more democratic planning “with” users, where consensus would be continuously negotiated. This would imply extending the design process from the discovery of needs and formulation of hypotheses to actual use of architecture. Not only should users be included in the design phase, but buildings should allow growth and flexibility during use: adjustment, subtraction, adding to, or modification of the space by users (ibid., 21). These ideas can be paralleled with the development of open building systems.

Around the same time, Sherry Arnstein (1969, see even Broome 2005, 65 and Till 2005, 25) introduced her influential eight-degree “ladder of participation” concerning citizen power in determining the end product of public planning. The two bottom rungs of the ladder in fact describe forms of non-participation, where genuine participation is substituted by *manipulation* or *therapy* of powerless groups by power holders, giving them an impression of influencing decision-making while actually trying to “teach” or “cure” them. Next steps in the ladder are *informing* (one-way communication from authorities to citizens with no channel for feedback or negotiation), *consultation* (eliciting citizen’s opinions through surveys, meetings or public hearings; often poorly taken into account in actual decision-making), and *placation* (inviting citizen representatives to public bodies and helping them to articulate their priorities, while retaining the decision-making power to the officials). To Arnstein, true citizen empowerment is represented by *partnership* where decision-making responsibilities are shared between citizens and power holders through joint structures, *delegated power* where citizens are given the dominant decision-making authority over a particular plan or project, and *citizen control* where “participants or residents can govern a program or an institution, be in full charge of policy and managerial aspects, and be able to negotiate the conditions under which ‘outsiders’ may change them” (Arnstein 1969).

During the last few decades, planning theory and practice have experienced a “communicative turn” away from hierarchic rationalism, towards understanding urban planning as discursive sense-making and value-seeking between local stakeholders, as conflict mediation, and as strategic management of collective affairs (Healey 1997). Finland’s



operative Land Use and Building Act stresses openness of planning and everyone's right to participate in it. In reality, residents rarely participate in actual decision-making. Their role in most cases is limited to providing local "situated knowledge" and background information to planners, and to giving feedback on plans devised by experts. A specific problem in participatory planning is that the future residents of a new area are usually not known in the planning stage and thus cannot be engaged in a participatory process. In Finland, inclusion and participation of residents to urban planning and design has been discussed by Aija Staffans (2004) and Marketta Kyttä (e.g. Kyttä & Kahila 2006). Sari Puustinen (2006) has studied the communicative turn in the planning profession. Considering urban development, there's research on the use of integrative negotiation ("urban design management") in value creation (Edelman 2007), and on public-private-people partnerships in urban residential development (Majamaa 2008, Kuronen 2011). These provide little input to housing design.

The reliance of architecture on expert knowledge poses a dilemma for user participation. Architects collectively, according to Jonathan Hill (2003, 10), need to conceive users as passive and predictable in order to protect their sole authorship of architecture. The hierarchy between architect and user is maintained by denial of the user (assumption that a building need not be occupied for it to be recognised as architecture) and control of the user (determining forms of user behaviour acceptable to the architect). According to a Finnish study (Rask et al. 2008), the housing industry sustains inbred myths about consumers. Consumers are seen as passive, conservative, and without design competence. Thus, developers do not think that it is possible to gain economic value from differentiation beyond the current superficial mass customisation.

Jeremy Till (2005, 29–33) argues that the architectural culture is in a state of denial about participation. There is a gap between the specialised knowledge of architects that constitutes their status, and the "normal" knowledge of the social life-world. Architects are afraid that by acting "normally" they would lose their professional status. Consequently, architectural participation is often pseudo-participation that creates a "feeling" of participation while it actually is about getting "the presumed support of the citizen user for actions that have already been determined by professional agents" (ibid., 26). Till calls for more transformative methods of participation that would harness the expert knowledge and innovative capacity of professionals to the service of the users in a way that would transform their expectations and

futures. This would require expanding the knowledge base of architecture. Architects should develop their sensitivity to context, acknowledge the transformative potential of users' knowledge, provide channels for its articulation by methods such as storytelling, and find ways to negotiate as well as deal with change and contingency (the "messy, complex, lives of users"). Till proposes thinking of participatory design as "negotiation of hope", a process of making sense together that posits a better future for people and the built environment. (Ibid., 32–41.)

Early participatory design methods were rejected by the mainstream housing industry due to "preoccupations of reducing costs, improving efficiency and moving into prefabrication" (Broome 2005, 65). Profound participation of each individual customer to the design of their dwelling is not realistic in mass produced housing, at least not until the implementation of more advanced mass customisation models. As opposed to public urban space, on the other hand, people have more control over dwelling space as it is. This is evident in custom-designed detached houses, but the owners themselves can relatively easily modify even mass produced flats. Previous participatory methods of an idealist stance usually aimed at providing communities of users tools for translating their preferences into plans that were then finalised by architects, a typical project being a small group of detached houses initiated by the residents. In this model, architects are stripped of authority and reduced to technical facilitators (Till 2005, 31). A Finnish study on the subject concludes that non-expert designers tend to reproduce conventional housing patterns (Horelli-Kukkonen 1993).

### 3.1.4                      RESPONSES TO THE DEMAND FOR MORE INDIVIDUAL HOUSING

Presently a new generation of urban housing projects that have been initiated by communities of interest and rely on more industrialised production is emerging in Finland. Recent examples in Helsinki include a communal apartment house based on group building, communal senior housing, and housing for young persons with developmental disabilities that is commissioned by their parents<sup>7</sup>. Authorities increasingly support group building by several households jointly. The emergence of these type of new forms of housing reflects social change and reveals qualitative gaps in the offering of housing. They are driven by sustainability, communality, affordability, individuality, or special needs that are not met

<sup>7</sup>.

The examples are:  
*Helsingin Malta* ("Malta of Helsinki") apartment house in Jätkäsaari ([www.maltamme.fi](http://www.maltamme.fi)), *Loppukiri* ("Sprint") senior house in Arabianranta ([www.loppukiri.fi](http://www.loppukiri.fi)), and *Käpytikka* ("Woodpecker") house in Arabianranta ([www.kapytikka.fi](http://www.kapytikka.fi)).

by existing solutions, and engage co-development that goes beyond the surface of dwelling, seeking to alter its deep, “wicked” structures.

Also the Finnish housing research community has shown interest in collaborative residential product development. A recent research project (URBA, see Norvasuo 2008 and 2010) focused on identification and co-development of new housing concepts that would suit the needs of the Helsinki region. In architectural research and practice, the discourse on individuality and user-centredness is manifested as interest in the typological diversification of urban housing and in the flexibility of dwellings (Krokfors 2006, 2008 and 2010). Architects have envisioned new urban dwelling types and building types that would suit various lifestyles or demographic groups (Ilonen et al. 2006), and explored the possibilities of architectural variation of current types of urban apartment houses (Pakkala et al. 2007). As further influence in the field can be mentioned the Scandinavian phenomenological tradition of architectural thinking on the experiential and sensory aspects of domestic space (e.g. Pallasmaa 2005, Nylander 2002, Nyman 1989).

As will be seen in Chapter 4, the commercial housing industry’s response to the demand of individuality has been the launching of housing concepts or brands, usually based on customer segmentation and offering the customers some choices regarding the spatial arrangement, fixed furnishings and surface materials of their flat. The concepts are duplicated in many locations with architectural form varying according to the project. The concepts tend to be rather similar, and little actual diversification of the offering can be seen, particularly not on the typological level. The concepts represent different degrees of customer engagement. They can be complete standardised design solutions targeted at certain customer segments, offer a range of pre-designed layout options and interior style packages to select from, or provide a semi-finished apartment shell to be completed by the residents themselves. Customer participation is employed in different phases of the process for identifying design requirements or for allowing people to manipulate some features of their dwelling. This can be enabled by some level of mass customisation facilitated by online customisation tools. The concepts marketed by the industry have been criticised as superficial pseudo-diversity suppressing the “real” needs of people and actually homogenising the offering of housing (Krokfors 2006, 21; Mäntysalo & Puustinen 2008). It has also been suggested that the market-oriented housing industry may itself create demand for diversification by forcing more and more decisions

on customers and by “inventing” needs related to hedonistic aspects of consumption (see Juntto 2010a, 36).

To sum up, two distinctive and somewhat contradictory strategies for achieving more diverse and individual dwellings can be detected when examining the field. A *technological* approach aims to utilise the potential of new technology to produce flexible, adaptive, personalised dwellings that respond to the needs and behaviours of individual users. This can be achieved by methods such as mass customisation. Technological, manufacturing, and business innovation drive this approach. It emphasises dwelling as duplicable consumer product. Another, *social* (or collaborative) approach stems from user initiative and social innovation as drivers of discursive co-development processes where holistic housing solutions that aim to solve certain valuable needs of the future residents are developed in interaction between the residents and experts. This approach tends to consider also the properties of dwelling that are beyond immediate architectural and technological means, such as new service models. Its results are one-off unique housing projects built for specific users. This strategy seems to incorporate more public involvement. Both approaches require critical reassessment of *design* – its object, position and competencies. Neither seems to fully exploit the transformative capacity of design. Architectural design has not been a key success factor in any of the recent innovative housing solutions. The technological approach is based on the implicit assumption that adding pre-determined components together into variable combinations automatically leads to user satisfaction. The social approach relies on product development by non-expert users, undermining the innovative capability of expert designers.

The fragmentation of building as a design object, the division of the architectural field into a highly artistic avant-garde and non-innovative commercial/popular practice that is subordinate to the industrial production system, denial of the individual user in architectural culture, underdeveloped participatory approaches in architectural design, and poor ability of the regular architectural design process to tap into and give transformative shape to novel ideas coming from outside of it (from the realms of users and producers) all indicate a weakness in traditional housing architecture in addressing some of the new demands instigated by social and technological change. Could learnings from industrial product design help tackling some of the emerging design challenges in dwelling?

## The expansion of design

### 3.2.1

#### USER-CENTRED DESIGN AND USER EXPERIENCE

The emergence of *user-centred design* as a philosophy and methodology in industrial design can be seen as a response to accusations of the “design community’s lack of attention and commitment to genuine human and ecological needs” (Keinonen 2010, 17). It also reflects the move towards increasingly differentiated and personalised products, as well as the growing technological complexity of products and stagnation of technology push. User-centred design is “an approach to design that grounds the process in information about the people who will use the product” (Usability Professionals’ Association 2012). Its main background is in usability engineering for human-computer interaction systems, and it draws from disciplines such as cognitive psychology and sociology. The term user-centred design was coined in the 1980s (e.g. Norman 1988). Since then, there has been considerable academic activity around the theories, methods and practices of user-centred design, resulting in multiple loosely connected approaches ranging from ergonomics and usability engineering to participatory design, design for user experience, service design, and lead user innovation. As its application has expanded from computer interfaces to wide variety of consumer products, systems and services, the general focus of user-centred design has evolved from objective, measurable qualities to consideration of more subjective, contextual and comprehensive *user experience*. (Keinonen 2010, 17–18.)

The fundamentals of the user-centred approach are defined in the ISO standard on Human-centered design<sup>8</sup> for interactive systems (ISO 9241-210, 2010). It lists following principles of human-centred design: the design is based upon an explicit understanding of users, tasks and environments; users are involved throughout design and development; the design is driven and refined by user-centred evaluation; the process is iterative; the design addresses the whole user experience; and the design team includes multidisciplinary skills and perspectives. The standard presents four design activities that should take place in the design of any user-centred system: understanding and specifying the context of use (including identification of users or user groups and their

8.

The standard (p. 2) uses the term “human-centred design” rather than “user-centred design” to emphasise inclusion of also other stakeholders than those typically considered as users. The terms are often used synonymously. I shall prefer “user-centred design” because it is established in the field of design research and emphasises use (interaction between people and products).

characteristics, their goals and tasks, as well as the environment of the system), specifying the user requirements (and resolving trade-offs between them), producing design solutions, and evaluating the design (e.g. by user-based testing or long-term monitoring). The solution generation phase entails designing the user tasks, user interaction and user interface of the system to meet user requirements, taking into consideration the whole user experience; concretising the solutions with the help of scenarios, prototypes or such; and altering the design solutions in response to user feedback.

The ISO standard defines user experience as “person’s perceptions and responses resulting from the use and/or anticipated use of a product, system or service”, and continues: “User experience includes all the users’ emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviours and accomplishments that occur before, during and after use.” As for the relationship between user and the designed object, “[u]ser experience is a consequence of brand image, presentation, functionality, system performance, interactive behaviour and assistive capabilities of the interactive system, the user’s internal and physical state resulting from prior experiences, attitudes, skills and personality, and the context of use.” (ISO 9241-210, 2010, 3.) Contributions of design research to understanding of the user experience emphasise temporality (Forlizzi & Ford 2000), social interaction (Battarbee 2004), pleasure (Jordan 2002), or emotion (Norman 2003). A broad definition is given by Jääskö and Keinonen (2006).

Various frameworks and methods for investigating user experience and capturing it as part of design process have been developed in design research, such as contextual design (Beyer & Holzblatt 1998) and empathic design (Koskinen & Battarbee 2003). Empathic design stresses the designer’s skill to imaginatively project herself into the world of the user. Applying empathy in design process requires willingness by the designer, ability to alternate between experiencing and reflecting, and investment of time (Koupric & Sleeswijk Visser 2009, 447). To access people’s experiences, designers should listen to what people say, watch what they do, and give them tools for expressing their thoughts, feelings and dreams (Sanders & Dandavate 1999). This can be facilitated by a variety of methods ranging from traditional to applied and innovative (Hanington 2003, see Mattelmäki 2006, 30). Traditional methods like market research, surveys and interviews produce quantifiable information on a large number of people but conceal the needs of individuals. Applied methods such as observation and ethnography are more useful for getting a rich picture of individuals’ experiences in real-life contexts,

including their motives, emotions and values. Innovative methods emphasise creativity and participation, working through visual information, metaphors and associations.

The information gathered for user-centred design differs from scientific information. It is typically exploratory rather than explanatory, divergent and personal rather than generalised, and design-oriented. User-centred design is an iterative process where the design problem and its solutions develop hand in hand. In this process, as put by Tuuli Mattelmäki (2006, 34), “[t]he benefit of experiential, non-objective methods is the insights and ideas they facilitate and the possibility of shared experiences offering the design team a common basis”. The methods aim to provide knowledge and inspiration for multi-disciplinary design teams especially in the early “fuzzy” stages of product development.

Some of the methods and approaches in user-centred product design may seem rather ideological and programmatic. However, the contemplation of them in the context of housing and dwelling to my mind can be beneficial because they provide concrete tools for dealing with users and their needs in the design process that are largely lacking in mainstream architecture and residential development. Attuning designers to user experience also implies an important shift of mindset.

### 3.2.2 OPENING OF THE DESIGN PROCESS

The growing scale and complexity of design problems has also engendered a move in the design field towards more collective creativity where users and other stakeholders are engaged as active partners in the design process, in continuation of the tradition of participatory design. Sanders and Stappers (2008, 6) use the term co-creation as umbrella to cover any act of collective creativity. *Co-design* as defined by them is “creativity of designers and people not trained in design working together in the design development process”. Co-design reflects the ongoing shift of perspective of design from products to people’s purposes. It emphasises design as collaborative multi-stakeholder activity, able to address complex and ambiguous human problems where opportunities are open-ended and cannot be immediately solved by a specific product or service.

Sanders and Stappers (ibid., 12–15) demonstrate how co-design is changing the roles of users, design researchers and designers. When people, depending on their creative ability, are given authority in the design process, the role



of design researchers will need to change from translator of users' needs to facilitator of their creativity across the process by "leading, guiding, and providing scaffolds, as well as clean slates to encourage people at all levels of creativity" (ibid., 14). Paradoxically, the skills of professional designers become even more important in co-design. Their participation is essential because of their overall ability to act in complex environments, ability to use and develop generative design tools and methods, expert knowledge on technologies and the industry, and specialised skills in different sub-areas of design.

According to Sanders and Stappers (ibid., 9–10), adoption of co-design by companies has been slow because it threatens the existing professional power structures, is antithetical to consumerism, and is considered an academic effort with little relevance to business. They identify architectural and planning practices as the last of the traditional design disciplines to become interested in new design approaches, and suggest that architectural design could greatly benefit from co-design methods in facilitating collective creativity between the design team, various user groups, and the array of specialists involved in building projects (ibid., 16). In Finland, vaguely co-designerly methods have been utilised in the development of the previously mentioned resident-initiated housing projects, even if actual impact of users to design decisions in these cases is unclear.

Digital communication ideally empowers people and enhances participation to design and production. Technology can familiarise people with designer-like activity, potentially transforming them from passive consumers into co-creators of products. User innovation (von Hippel 2005) is one instance of co-creation. It not only refers to innovations developed by users, but to the incorporation of information provided by multiple users in a joint product development process managed by a manufacturer or several manufacturers. According to Eric von Hippel, a large part of the information needed in innovation processes is "sticky" by nature. Solution information is mastered by producers, but need and context-of-use related information is distributed among users. Von Hippel argues that as most products before being manufactured consist merely of information, product development tasks can be co-located with the information needed to execute them. Certain tasks can be outsourced to users if they are equipped with appropriate toolkits, such as web-based design tools connected to the manufacturing system.

Identification of innovative "lead users" who are at the leading edge of an important market trend and anticipate high benefits from obtaining solutions to their needs is central



in the user innovation model. Apart from lead users, the design field has shown interest in “extreme users” or “non-users” as informants for design. Other models of a similar basis include open innovation and crowdsourcing. What the models have in common is the attempt to harness the innovative capacity of individual users or user communities to the benefit of a broader audience. Applying them in housing would mean that customers not only participated in configuring their own dwelling, but could contribute to the development of solutions available to other people as well.

These ideas are brought even further with the notion of open source architecture, suggesting the opening of the architectural practice towards a collaborative learning organisation analogous to open source software development, changing design from one-off action into a continuous process (Kaspori 2006, 512–513). Realistic or not, opening of the architectural design process would require new design methods and tools, such as digital toolkits for user-designers. An interesting related development in avant-garde architectural practice is the emergence of generative computational design strategies.

### 3.2.3

#### BROADENING OF THE SCOPE OF DESIGN

Move of design activity from an external to an internal perspective, closer to experiences of people who use products and to everyday situations and environments in which they are used, is changing the conception of product and expanding the object of design. In design theory, extension of the design process to include the planning of systems (i.e. relationships between products) in addition to products themselves has been argued by several scholars, among them John Chris Jones (1981, 31). He outlines a four-level material hierarchy of the object of design comprising components level, products level, systems level, and community level, and argues that most design problems nowadays are at the systems or community level and therefore require combination of the skills of designers with political decision-making and organisational planning.

Richard Buchanan (2001, 12) in his seminal article *Design Research and the New Learning* describes how the object of design has expanded from symbols (represented by graphic design) and things (industrial design) to actions (interaction design), i.e. to understanding “how human beings relate to each other through the mediating influence of products”, and to *thought* (environmental design). By the

last he refers not so much to material environmental design in a material sense but to designing human systems; “the integration of information, physical artifacts, and interactions in environments of living, working, playing and learning”, as well as the personal pathways of people through those systems. When the task of design is broad as this, its focus becomes the “idea or thought that organises a system”.

A similar turn of perspective from outside to inside and expansion of focus has been articulated in architectural theory, although one may argue that the human experience has always been part of architecture more than in the case of many industrial products. C. Thomas Mitchell (1993) has explored the dematerialisation of the object of architectural design. He asserts that the reason why architectural designs in present society often fail is because the design process is attuned to production of physical form instead of user experience. He suggests that architecture could learn from other disciplines, particularly scientific design research, in how to explicitly address user behaviour and wishes (ibid., 35). This would mean turning the design process “inside out”. Mitchell, drawing on the work of Christopher Alexander and John Chris Jones, identifies three user-responsive design methods in architecture: collaborative design that invites non-designers as equal partners, contextual design aiming to amplify specific physical conditions and situations, and intangible design that takes human intentions and systems as its object (ibid., 68–69).

Along the same lines, Anna Klingmann (2007, 217, 251–253) claims that architects take for granted that regular architectural design playing with volume, organisation and materials automatically provokes human emotional sensation, whereas we should understand how the architectural experience is created by drama, diversity and detail, and how it can be intentionally designed. She suggests thinking of architecture less in terms of form (“what it has”) and programme (“what it does”), and more in terms of experience (“what you’ll feel”) and identification (“who you are and who you want to be”). This should not mean emphasising architecture’s formal expression as spectacle, but realisation of its strategic function as “an engine to reveal and accelerate a city’s *inherent* potentials”, bringing about viable social, economic and cultural transformations.

Klingmann sees a central role for architects in fostering authentic local identities amidst the all-pervasive consumer culture: “[a]s experiences become more and more commodified, and the global landscape is progressively more homogenized by the same regurgitated dogmas and formulas, it falls for the architects to infuse our aseptic landscape with

authentic transformations” (ibid., 322). Similarly, Manuel Castells (1996, 449, 453) has brought up how the information society is threatening to lead to “ahistorical, acultural” built environment that has little meaning and relates to nowhere but the imagery of global mass culture. Castells argues for a full realisation of the potential of architecture and design as devices of cultural innovation, interpretation of information, and preservation of meaning. In the information society, architecture and design have an essential role as *reconciliation* of culture and technology; the local and the global.

Klingmann (2007, 311–319) presents ten “reminders” for architects that despite their somewhat simplified tone are useful in illustrating the new demands met by the profession: architecture should reorientate itself from product to *brand*, from need to *desire*, from performance to *experience*, from plan to *choreography* (movement of people through space and construction of space as event), from programme to *ambience*, from impact to *contact*, from function to *form*, from commodity to *catalyst*, from physical to *human context*, and from object to *subject*. What Klingmann basically attempts is a restoration the role of architects in late-modern conditions by retooling them with instruments bred by those very conditions. Her argument is directed at public and commercial urban space, but is equally relevant to housing.

A move of focus has been detected in design theory after the Second World War away from the material object of design both upstream (designers’ side) and downstream (users’ side) of the design process, first to the design process and to the functions of products, and more recently further towards either the actors in the design process or the holistic user experience (Findeli & Bousbaci 2005). This also implies a shift in design philosophy from aesthetic to logical and ethical questions. New design approaches such as service design and value-based design reflect the change of scope. Concerning dwelling, the dematerialisation of the object of design is demonstrated by an interest in intangible aspects such as practices, time or atmosphere as an object of design. The turn towards practices in social theory (Schatzki et al. 2001) counters the individualisation trend by emphasising similarity; the shared and routinely activities of living instead of differences in needs and lifestyles.

One way to get closer to users in “real life” has been examination of the temporal relationship of people and the living environment: time geography (Hägerstrand 1970), everyday time management, time politics and time planning (e.g. Horelli & Wallin 2006), macro- and micro-rhythms of daily life (e.g. Pantzar 2010), and time-based housing architecture

that responds to changing situations (e.g. Krokfors 2006). Aesthetically leaned architectural literature has explored the holistic atmosphere and sensory experience created by architecture – the visual, acoustic, olfactory and haptic aspects of the dwelling space (e.g. Böhme 2006). A further important discussion in design studies is that on value, especially *user value* as a goal of design (e.g. Boztepe 2007).

#### 3.2.4

#### REPOSITIONING OF DESIGN IN INDUSTRY AND THE SOCIETY

The design professions are in transformation as well. As the object of design extends from stand-alone products to complex “product milieus”, designers find themselves as managers of large product webs (Margolin 2002, 45). Increasing ill-definedness, social embeddedness and systemicity of design problems sets new demands for design practice and education. Donald Schön (1983) has already in the 1980s anticipated a move from traditional professionalism based on narrow specialisations to professional pluralism, where designers would adopt more flexible and situational roles, drawing from a multiplicity of knowledges and working with socially defined problems determined by societal need. The quest for integrative, collaborative, innovative design professionals capable of applying design thinking to any area of human experience directs enquiry into the nature and value of design expertise: how designers formulate problems and generate solutions and what kind of processes and strategies they employ.

Schön (ibid.) has famously described design as a reflective practice, largely tacit “reflection-in-action” where practitioners make use of skills and abilities learned in practice in an improvisational manner for making sense of problematic situations and devising solutions to them. Design practice is thus a cyclical process where previous experience is applied to new situations, and where problem and solution co-evolve. Schön maintains that creative practitioners have a learned capability to bring about desirable change to problem areas characterised by complexity, uncertainty, instability, uniqueness and value conflict, where traditional expertise relying on technical rationality does not work. As these kind of problems are not presented as given, core expertise of designers is related to definition of the problem itself and the scope of its potential solutions. For this, designers use strategies such as *naming* and *framing*: “we name the things to which we will attend and frame the context in which we will attend to them” (ibid., 40).

Designers, affirms Nigel Cross (2007), have a particular way of knowing that derives from both theory and practice and is solution-oriented and constructive by nature. Designers have developed cognitive skills related to problem formulation, solution generation and process strategy (such as ability to perceive new, previously unrecognised properties as lying within existing designs). Cross states that design reasoning is “appositional” by nature, meaning that purpose and form are developed in parallel rather than in a series. He emphasises the importance of a *creative leap* in the process. By this he means the crucial “illumination”, “significant innovation or novel design concept” that by bridging the diverse parts together “recognisably embodies satisfactory relationships between problem and solution” (ibid., 65, 78).

Discussion on the abilities of designers can be complemented by the idea of *design-driven innovation* (Verganti 2009). Verganti criticises the prevalent belief that innovations come either from a technology push or directly from the market, and argues that truly radical innovations “of meanings” require abandoning conventional user-centred approaches and taking a broader, design-oriented perspective into the world. He suggests looking “beyond customers to those ‘interpreters’ – such as scientists, customers, suppliers, intermediaries, designers, artists – who deeply understand and shape the markets they work in”. Design-driven innovations aim to create new markets rather than provide incrementally novel solutions to existing markets, and push new meanings instead of technology.

The repositioning of design in society and in the industry during the 2000s is characterised by its integration, digitalisation, dematerialisation, democratisation, fragmentation and increasing strategicness (Ruoppila et al. 2009, 8–12). Merging industrial design with technological and business-driven product development activities is blurring the professional boundaries in product development teams. Digitalisation has created new (virtual) product categories with special design challenges. Products are increasingly multidimensional and reach users through multiple channels. The product to be designed can comprise various physical parts, a digital interface, online services with changing content, personal services, and the concepting and management of all these components. In addition to core products, the processes, projects and programmes of companies are objects of design (Falin 2011).

Democratisation of innovation brings design out from hierarchic expert organisations, changing the role of designers. Design competence is becoming more divergent,

which makes the professional field heterogeneous. Anna Valtonen (2007) has recognised a general trend within the Finnish industrial design profession from operative design to more abstract and strategic work, and towards increased specialisation. Designers are nowadays involved in design management and company-level innovation activities. A recent study shows that design expertise in companies is not limited to educated designers but is possessed by other experienced professionals, too (Falin 2011, 64).

Design is also taking a more strategic role in opening up future possibilities and guiding business decisions in companies. Järvinen & Koskinen (2001, 32–36) describe the stratification of industrial design into product design, conceptual design and strategic design, each with different focus and time perspective even if building on each other. Strategic design looks beyond the immediate situation, typically for five years or more into the future, and operates outside the linear product development process, contributing to the setting of long-term targets of a company, such as decisions on new product lines and technologies or identification of new markets. Designers in a strategic role participate in reconceptualising and redefining not only individual products but the whole system of production, and push companies to culturally rethink their activities. In the strategic design mode, designers collaborate closely with research and development, engineering, and marketing, and are connected to strategic management, producing outputs such as scenarios or visionary product concepts. This requires new skills from designers and ability to relate to diverse fields of knowledge.

Mervi Hasu (et al. 2004, 39, drawing on Michael Porter's generic strategies for competitive advantage) has detected two opposing directions of expansion of product development activity in the technology industry: cost leadership strategy and differentiation strategy. The cost leadership strategy aims at increased economic efficiency by focusing on qualities such as manufacturability, transportability, installability, serviceability and updatability of products. The differentiation strategy seeks to create value by tapping into under-served individual demands of customers. It targets issues such as user experience, user interface, services, and customisation of products. The two strategies require different design competences: competence related to product structures and production processes, as opposed to competence related to customers and their processes. According to Hasu, development of especially the latter presents a major challenge for the industry. Turkka Keinonen (2009) continues Hasu's argument by identifying several tensions that are apparent in the present

design environment. The tensions are related to technology (technology neutral versus technology driven design), innovation (update innovation versus radical innovation), competence (layperson designers versus researcher designers), readiness (do-it-yourself versus proactive readiness), and generality (specific design versus general design).

Two simultaneous trends can be seen here that indicate the expansion of design away from traditional product design: one approaching users, and another distancing from them as well as from individual products to look at more abstract and generic questions. At the opposite ends of the span, Keinonen (ibid.) sees two emerging design practices or orientations of design: *immediate design* and *remote design*. Immediate design addresses individual people's needs in specific local contexts and within practices of use, relying on methods like user-centred design, co-design and even self-design. It primarily applies existing components to achieve incremental change and adaptation of environments towards more user-specificity. Remote design aims at structural changes. It works on a higher level of abstraction and within enabling societal systems and practices:

*Remote designers work for general solutions, principles, or understanding over individual contexts or implementations. They create conceptual, infrastructure, methodological, regulatory, competence, or resource-related foundations for others to develop products or local practices. When remote designers' conceptual work turns into more tangible design, the results are either concepts meant for decision-making, learning, or influencing; or they are models for generic design platforms that will be adjusted before becoming useful for end-users. (Keinonen 2009, 71.)*

Remote design is close to business development, strategic planning and society-level decision-making. It differs from strategic design in that it covers a broader category of activities, including academic research and regulatory work.

One could claim that design practice in the case of housing is already aligned with Keinonen's model. Dwellings result from a hierarchic, top-down, generic-to-specific design process involving planners (remote design) and architects (product design), as well as interior architects and product designers (immediate design), working in decreasing scale of the built environment and with shortening distance to users. The similarity, however, is only superficial, as scale and distance in this case are merely physical measures and do not connote increasing consideration or involvement of users.

In practice, architects, interior architects and product designers, especially regarding mass produced urban housing, are no closer to individual users than other professionals working on a more generic level of design. Nor is the remote mode of design developed in the field of housing. What Keinonen and other advocates of the transformative societal power of design imply is a step outside of the current design tasks and processes to a designerly mode of questioning that can change some of the basic assumptions of what we should be designing for.

Later in the study, I will use Keinonen's three-tier model for analysing the changes in design activity in the housing industry and for opening up the implications of the study to the design of dwelling. To me, it captures the expansion of design in a way that is relevant to the dissertation and offers a model that can be transferred across product categories.

### 3.2.5

#### TENSIONS IMPACTING THE DESIGN OF DWELLING

Reflection of the developments outlined above with the present state of housing production in Finland and with related research reveals some general tensions in the field. These illustrate more or less explicit practical challenges met by professionals within the housing system but also represent gaps in theoretical knowledge. The tensions can be seen as manifestations of more general dilemma in late-modern society concerning the personalised versus commodified experience (Giddens 1991). One tension, evident in the construction industry, is that between *singularity* and *seriality* of production: how to meet unique local demands and circumstances with industrial production systems relying on standardisation and duplication. In housing, the problem is twofold. On one hand, there is a need in building design and engineering for reconciliation between buildings as singular located artefacts and the logic of mass production relying on prefabrication in large volumes. From the perspective of architectural design, this leads to questioning of the leverage of architecture in the repetitive housing production. On the other hand, the question becomes how to extend the qualitative scope of housing in regard to individual customers without losing the advantage gained from standardisation.

A second tension concerns the *specificity* versus *generality* of designs in relation to individual users. As noted earlier, the connection of housing research and conventional user studies to design of housing is weak, largely because of their generality and foreseeability. More exact and fine-grained



knowledge would be needed on the relationship between the experiences of individual residents and specific designable attributes of housing. Finding a balance between specificity and generality in housing design and production would benefit from identification of those attributes of dwelling along which the user needs most diverge, allowing diversification of the significant components according to the range of user needs and standardisation of less significant components. From the perspective of housing architecture, this tension opens up two opposing directions out from the spatial uniformity of the prevalent mainstream dwelling type: dwellings that are highly tailored to individual specifications, and polyvalent dwellings that allow “all” uses. The tension suggests closer examination of the reciprocity between user experience and dwelling as a material artefact.

A third tension spans between *novelty* and *conformity* of designs in relation to other designs. Even if much of the material form of dwelling necessarily results from reproduction of a culturally defined model of the home in the prevalent production paradigm, there is a need for qualitative variation within the given constraints. This calls attention to the degree of conformity versus divergence within dwellings as artefacts, and suggests closer examination of the meaningful qualitative difference that distinguishes dwellings from each other. Novelty within housing is partly a “natural” outcome of the locatedness and architectural uniqueness of buildings, but can also be intentionally designed, as the housing concepts illustrate. This tension is therefore also closely related to the nature of innovation in housing: whether, for instance, the development of housing relies on incremental refinement of precedents or radically different designs that break beyond the existing solution space (cf. the innovation tension, Keinonen 2009).

## 3.3

## Conceptual design and the notion of concept

The dissertation at large deals with the question of *conceptualisation* of dwelling as a product and object of design. One of its aims is to investigate the role of *conceptual design* in housing. The study explores ways in which the dwelling product allows itself to be designed on a conceptual

level, beyond regular building design, especially in relation to users. At the same time, the emergence of *housing concepts* has brought the notion of *concept* to the attention of the housing field. This will be the topic of Chapter 4. The term concept frequently surfaces in the design field as well as in the media, often in conjunction with some novel product or commercial activity. It seems to be used rather ambiguously and lack a singular, exact definition. The central position of conceptual design and the notion of concept in the study has necessitated a closer analysis of the terms.

### 3.3.1

### CONCEPTUAL DESIGN

*Conceptual design* can be defined as an early phase in the design process that operates on a higher level of abstraction than physical implementation design (Keinonen & Takala 2006). It relies critically on mental conceptions and ideas, and explores far-ranging design opportunities in order to create guidelines for subsequent design execution, avoiding premature fixation to specific designs. David Jansson (1990; Jansson & Smith 1991) has presented a theoretical model of conceptual design. According to him, conceptual design necessitates movement between two interlinked, imaginary spaces, “configuration space” and “concept space”. The configuration space contains representations (such as diagrams or sketches) of the physically realisable configurations of the designed object including its physical elements. The concept space contains abstract ideas, concepts and relationships which have potential to become basis for the elements in the configuration space. In conceptual design, movement from one point to another in configuration space happens *via* concept space. Changes to design configurations are motivated by abstractions taking place in the concept space, while it is in the configuration space that the abstract ideas are given “some real form”. Jansson (1990, 223) describes the two-way process:

*The process of moving from configuration space to concept space can be thought of as abstraction or generalisation; that is, generalizing from the particulars of a physical configuration to a conceptual understanding in order to change it or improve upon it. Movement from concept space to configuration space can be thought of as realisation or particularisation – bringing to reality, in particular physical form, the [...] concepts arrived at within concept space.*

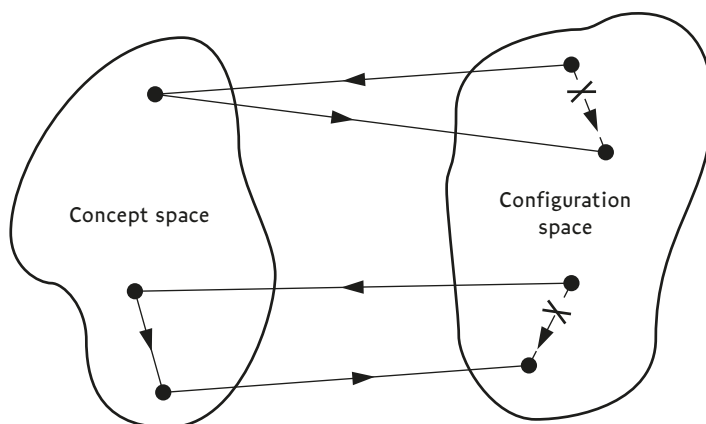


FIGURE 6.  
A theoretical model  
of conceptual design  
(Jansson & Smith  
1991, 4).

One can argue that all professional design involves some degree of conceptualisation regarding the design problem and that the interplay between abstraction and realisation is a central part of design work. As seen, *concepts* in Jansson's theory are abstract level, preliminary solutions to a design problem that precede actual implementation designs.

### 3.3.2

#### THE NOTION OF CONCEPT IN DESIGN

In its basic meaning, a concept is a comprehensive idea or generalisation that brings diverse elements into a basic relationship. The word derives from Latin, meaning literally “(a thing) conceived”. In philosophy, a concept is “an idea or mental image which corresponds to some distinct entity or class of entities, or to its essential features, or determines the application of a term (especially a predicate), and thus plays a part in the use of reason or language” (“concept”, Oxford Dictionary of English 2010). Concepts as logical entities refer to reality and help us to make sense of it. They also play a part in designerly problem-solving, helping to define and categorise abstract knowledge (Schön 2001). As pointed out by Schön, concepts are transferable. Abstracting a concept from its original context leads to generalisations and applications of it into different problem situations.

The basic meaning of concept is complemented by another meaning, that of concept as “draft or abstract”, “rough copy”, or “set form” (“concept”, Oxford English Dictionary 1989). While the first meaning emphasises the innate nature of concept, the second has an aspect of planning or intention to it. It also entails a formal dimension: concept “sets form”

to something. An important basic distinction therefore needs to be made between concept as an abstract idea (in German, *Begriff*, in Finnish, *käsite*) and concept as a more concrete draft or plan (*Konzept*, *konsepti*). The focus of this study is primarily in the latter meaning.

During the last few decades, an expanded usage of concept originating from business and marketing has entered dictionaries that also is connected to design. Concept is now explained as “a general notion or idea, especially in the context of *marketing* and *design*”, or “an idea or invention to help *sell* or *publicize a commodity*”. The term can also be used in reference to an artefact that is “produced as an experimental model to test the viability of *innovative design features*”, such as a “concept car”. (From the dictionaries cited above, italics mine.) These definitions highlight concept as something new to be offered in the market. Similar transformation of meaning has been detected in the Finnish language, where first occurrences of the word *konsepti* (concept) in the meaning of “business idea or product idea (of a company)” were recorded in late 1970s (Piehl 1993)<sup>9</sup>.

The meaning of concept in its recent business usage can be summed up as a “*general plan of a new product including its basic features (that distinguish it from other products)*” (ibid., quoting the dictionary of the Swedish Academy). By looking at literature and practical applications of concept in various design disciplines, it is possible to come up with a more detailed classification that illustrates the multiple facets of the notion.

#### CONCEPT AS INSTRUMENTAL DESIGN IDEA (ARCHITECTURAL DESIGN)

In creative design, concept is usually understood as being the synthetic design idea that brings diverse requirements of the design task together to guide the creation of designs. Following a simplified model, designerly problem-solving proceeds from exploring *problem goals* to establishment of a *problem frame*, that is used to identify some relevant *first principles*, to be embodied in a *solution concept* that is developed to satisfy the *solution criteria* (Cross 2007, 96). The solution concept is formulated by the designer prior to product specification on the basis of her assessment of the requirements and expectations in the given situation, which in architecture include the programme and site. Concept creation is influenced by the designer’s personal skills and preferences as it presupposes both knowledge of realistic possibilities and active imagination. (Leupen et al. 1997, 13.)

9.

In the Finnish language, the word *konsepti* previously had only the meaning of “draft or plan”.

*[T]he designer's view of the task leads to a concept. A concept need say nothing about the form the design is to adopt. Above all, it expresses the idea underlying a design and gives direction to design decisions, organizing them and excluding variants. There are a wealth of forms a concept can take; it can be a diagram, an illustration or a text. (Ibid.)*

In the linear building design process, conceptual design forms an initial creative phase that precedes building design. Its methods are vague and intuitive. As put by Östman (2005, 65), "It's here that designers initiate the most innovative designs or best solutions, and where they are closest to the creative moments[.]" The conceptual design process in architecture can be described as interplay between a leading idea and modifying factors. Design concepts can take the form of mental schemas, verbal descriptions or graphic representations. Images, sketches, diagrams, models and other concept representations encapsulate information coming from multiple sources into instrumental tools that have the capacity to act as "gestalts" in the design process (Wodehouse & Ion 2010, 57–58).

The capability to apply conceptual reasoning to design problems and to develop solution concepts is central part of design expertise. It requires lateral thinking and development of transferable personal knowledge structures. Practising designers collect a repository of repeated design ideas, schemas and principles that reflect their ethics, values and intentions, and that they are able to forage when faced with new design problems. (Lawson 2004, Casakin 2011.) On the other hand, Cross (2007, 104, 115) notes that designers' tendency to re-use features of existing designs hinders truly innovative conceptual design and that they typically attach to a single, early concept.

Here can be added Darke's (1979) notion of *primary generator*, referring to strong guiding themes adopted by designers in order to limit the problem boundaries and scope of solutions. Darke attests that architects typically fix on a particular self-imposed design objective or small group of objectives that helps them in reducing the variety of potential solutions to a manageable level. Vincenti (1990, 208–211) has written about *fundamental design concepts* as a particular category of knowledge in engineering. He states that designers embarking on any "normal design" bring with them fundamental concepts about the object to be designed, which include its operating principle and "normal configuration". Normal configurations are "the arrangements and shapes

commonly taken to be the best embodiments of [the product's] operating principles". Such fundamental design concepts in housing and dwelling would include the conventional dwelling layouts and configurations absorbed by professionals during education and practice.

To sum up, a concept in the meaning of a synthetic guiding idea is an integral element in designerly sense-making and solution generation processes, bringing internal coherence and direction to a design task. In creative professional design, a concept has an instrumental nature. It plays a double role as a distinctive goal for design, and as underlying operational schemata or template grounded in practice. This understanding of concept seems to be prevalent in architectural design. In avant-garde architecture, the concept is essentially aesthetic, its main role being the facilitation of the introverted artistic design process.

#### CONCEPT AS ANTICIPATORY PRODUCT DESCRIPTION (PRODUCT DESIGN)

In product design, concept is seen as an anticipatory, well-founded, focused and understandable description of a not yet existing product, service, environment, system, or process (Keinonen & Takala 2006, 28). In a more business-oriented meaning, "[a] concept is a description of the form, function, and features of a product and is usually accompanied by a set of specifications, an analysis of competitive products, and an economic justification of the project" (Ulrich & Eppinger 2004, 14). *Concept design* (concepting, also conceptual design) is an established task in the "fuzzy front end" of industrial product development<sup>10</sup> (Järvinen & Koskinen 2001, 33):

10.

The phases in a generic product development process are planning, concept development, system-level design, detail design, testing and refinement, and production ramp-up. The concept development phase can be divided into the following tasks: identifying customer needs, establishing target specifications, concept generation, concept selection, concept testing, setting final specifications, and project planning. (Ulrich & Eppinger 2004, 14.)

*Conceptual design involves creating new product concepts, and deviates from traditional practices. Designers create new concepts that may end up in production, but not necessarily. Rather, it is through these concepts that manufacturing organizations probe their markets. Concepts aim several years ahead. Typically, they capture developments for 2–3 years in the future. Concepts are grounded in company strategy, which includes competence creation in technology and markets, to name a few. In this work, designers may even get involved in technological and market research, and may open the frames set by other groups in the organization. Typically, in conceptual design, designers are involved early in R&D processes, where frames are set for future products, and where companies' concept portfolios are created and managed.*

Product concept design seeks to create a broad array of alternative concepts of which just a few are selected for further development. Concepts can support a range of corporate functions: design, innovation, creation of a shared vision, competence enhancement, or expectation management towards customers (Keinonen & Takala 2006, 20). Keinonen and Takala (ibid., 17–18) divide concept development activities into three categories. “Product development concepts” are created directly in conjunction with product development and aim at rapid implementation. “Emerging concepts” are designed in association with technological research or modification of products for radically different markets. “Vision concepts” outline possible futures beyond the scope of present product development activities. They are less restricted by feasibility requirements.

The emergence of concept design is connected to the stratification of design. The combination of product design and strategic design would be implausible without a concept design practice that mediates between them (Järvinen & Koskinen 2001, 32). Concept design is also driven by the diversification of markets, aestheticisation of products and acceleration of product development cycles that characterise late-modern production. Increasing technological complexity of products necessitates the development of their overall concept as well. As claimed by Ulrich and Eppinger (2004, 120), “The degree to which a product satisfies customers and can be successfully commercialized depends to a large measure on the quality of the underlying concept”.

Various structured methods for concept design have been developed within product design (see Keinonen & Takala 2006, Hyysalo 2009, Mattelmäki 2006). Means for representing product concepts include sketches, computer visualisations and models. *Experimental prototypes* are one instance of product concepts. The construction of a “concept car” or a “concept house” enables testing of the attractiveness of new product ideas among larger audience. The annual housing fair in Finland that showcases product novelties and consumer trends mainly concerning the detached housing market ideally functions as arena for prototypical development in the housing field.

In short, product concepts in the (technology) industry are comprehensive and concrete preliminary characterisations of viable future products, the generation of which is an established phase of product development. Concepts are used for exploring the possibilities opened by new technologies and markets. As opposed to architecture’s largely tacit and artistic conceptual design process, concept

design in the industry is a structured multi-professional activity making use of specific concept design and concept selection methods guided by explicit criteria. Concept design is connected to strategic management of product portfolios and product generations.

#### CONCEPT AS STANDARDISING TEMPLATE (ENGINEERING DESIGN AND SERVICE DESIGN)

A more systemic and parametric understanding of concept can be distinguished in fields such as engineering, user interface design, service design and marketing. Here, the concept defines the basic configuration and operational principles of a product or service, allowing variation in its realisations. The concept acts as a standardising and streamlining framework that enables the duplication of the product or service, ensuring its uniformity.

In engineering, conceptual design aims at “the establishment of the core technical concept about which the remainder of the design will be built” (Jansson 1990, 219, *italics mine*). The object of conceptual design are the underlying design parameters of a device. In user interface design, *conceptual model* is a high-level description of how a system is organised and operates, that specifies the major design metaphors and analogies, the basic concepts that the system exposes to users, the relationships between these concepts, and the mappings between the concepts and the task-domain. The conceptual model presents an idealised view of how the system works, the ontological structure of the system (its main objects, their relationships and control structures), and the mechanism by which users accomplish the intended tasks. The conceptual model, simple enough to be held in mind and worked on, acts as “bones” for more detailed design and implementation, and as shared point of discussion. (Johnson & Henderson 2002, 26–27, 32.)

In marketing studies, the key differentiating elements of a new product are divided into product idea, product concept and product image. A product concept in marketing is a “detailed version of the new-product idea stated in meaningful consumer terms” (Kotler et al. 2008, 557). It concretises the idea and benefits of the product to the customer with the help of a set of clearly communicated product attributes. Similarly, in service design, service concept is understood as specification of the underlying rationale and key elements of a service in relation to both the provider and the customer (Goldstein et al. 2002, 131):



*The service concept or ‘service in the mind’ [...] is the customer’s and provider’s expectation of what a service should be and the customer needs it fulfils. It provides a foundation for developing the what, marketing content, and the how, operations content, of a service as well as for facilitating alignment between the strategic intent of the firm and the delivery [of the] service itself.*

The service concept acts as the foundation upon which the components of the actual service delivery system are built. The concept also provides a framework for evaluating services as they change and improve, thus working for strategic advantage. Through manipulating the concept, numerous derivatives of the same core service can be developed and marketed to different target segments. (Ibid., 131–132.) Aaltonen et al. (2010, 14–15) have discussed service concepts in the context of housing.

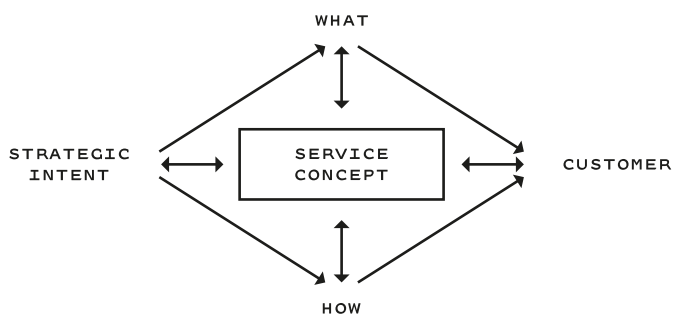


FIGURE 7.  
The service concept as a conjunction of “what” and “how”, mediating between the intentions of the customer and the service provider. (Goldstein et al. 2002, 124).

Concept in the meaning of underlying parametric framework, skeleton or pattern fundamentally serves the logic of mass production. It establishes a standard format or mould to govern subsequent replications of a product and to make them viable for the producer. This type of concept is essentially transportable and transmutable. Multiple applications can be derived from it that rely on same principles but may vary in appearance or locality. In construction engineering, for instance, concept buildings are “pre-engineered solutions that can be adapted to different needs” (Koskela 1992, 45). Concept in this usage serves systematic product differentiation and standardisation as well as the alignment of user needs along the industrial production system.

#### CONCEPT AS BOUNDARY OBJECT (COLLABORATIVE DESIGN)

The vagueness of the notion of concept has often been noted (e.g. Norvasuo 2008). The term is largely defined in practice and understood intuitively through its real-life occurrences.

The ambiguity must partly arise from concept's mediative role in-between abstract conceptions and specific designs. Another source for confusion may be the migration of meanings and usages of concept to new application areas and their intermixing. Diffusion of concept from marketing to the field of housing, previously dominated by architects' artistic idea of concept, is probably causing part of the theoretical obscurity around housing concepts. In their article about housing concepts, Mäntysalo and Puustinen (2008) suggest thinking of (housing) concepts as *boundary objects*.

Boundary objects as described by Star and Griesemer (1989, 393) due to their incompleteness provide a shared framework for collaboration among diverse actors and across social worlds. They are often heterogeneous combinations of abstract and concrete. Of the types of boundary objects outlined by Star and Griesemer, "ideal type" would best correspond with the notion of concept in design. Ideal type is an "object such as a diagram, atlas or other description which in fact does not accurately describe the details of any one locality or thing" but because of its abstraction is adaptable to many locations and serves as means of communicating and cooperating symbolically (ibid., 410).

Mäntysalo and Puustinen (2008) also refer to activity theory, where activity is seen organised around a shared conceptualisation of the object of activity, an *activity concept*. It connects the inputs of individual actors together, enables commitment and bridges communication between the actors. An activity concept is not directly comparable to concept in design as it denotes a broader, collective entity. The prevalent way of producing housing perhaps could be considered an activity concept.

#### CONCEPT AS CODE (GENERATIVE AND EVOLUTIONARY DESIGN)

Generative design as an approach in architecture and product design harnesses computer programmes as tools for automated form generation. Software is used to breed new forms rather than specifically design them. This calls for reconsideration of the design object. Conceptualisation shifts from tangible objects to interactive components, systems and processes, which in turn generate new artefacts. Methods in generative design include self-organisation (allowing components to interact with each other), evolutionary systems (breeding lineages of designs by simulating the process of natural evolution on a computer), and generative grammars (computations within a string of characters mapped to the designed artefact). (McCormack et al. 2004.)

Evolutionary generative design<sup>11</sup> can proceed either through a designer's aesthetic judgement (the selection of fittest variants among those generated and their crossbreeding) or through coding a fitness function into a system that "evolves" independently (ibid.). The supposed benefit of algorithmic design is its ability to produce unanticipated, surprising design outcomes that fall beyond the designer's expectations and own conceptualisations. The real outcomes, however, often lack both originality and intent (ibid.). Entirely computerised design is easily reduced to superficial morphological exploration unable to connect to real contexts. Manuel De Landa (2001) points out that virtual evolution also tends to exhaust itself early in terms of variation. He argues that deliberate design has a crucial role even in generative design, and that it is important for designers to address the "abstract diagrams" (a Deleuzian term) or "body plans" (a biological term) that designs are built upon. De Landa uses vertebrate structure as an example of this kind of a shared plan that is actualised as myriad "designs" in the architecture of animals. He maintains that computerised form generation in architecture should begin with an adequate diagram, an "abstract building" corresponding with the "abstract vertebrate".

In the context of generative computational design, it is possible to think of concept as a genetic algorithm or code, a set of rules that governs the formation of new design variants, or as more structured "body plan" that informs the configuration of a design. Concept here has a coding or programming function in relation to artefacts. In reflection to the broader evolutionary analogy discussed in Chapter 3.4.3, concepts would thus constitute "strings of dna" that determine how the "design genes" of dwelling are combined.

11.

Design evolution is here understood strictly as a computerised form generation process that takes place within the confines of a singular design project. This fundamentally differs from the long-term evolution of housing population that is discussed in Chapter 3.4.3.

### 3.3.3

### CONCEPT AND THE SYSTEMIC DWELLING PRODUCT

To sum up, concept in design can be understood as a guiding design idea based on the designer's creative interpretation of the design problem; an anticipatory description of the technology, working principles, and form of a new product that is used for strategic differentiation in the market; a template that specifies the basic elements of a product or service making possible its duplication in a standardised manner; an ambiguous object of collaborative activity; or an algorithmic set of rules that guides the generation of designs.

As a synthesis of the concept literature and the examples discussed earlier, I propose nine general qualities that are characteristic to the notion of concept in design:

<i>Distinctiveness</i>	Concept is a particular, distinctive and differentiated articulation of ideas and knowledge that is intentionally devised or invented for a purpose. It is often explicitly depicted and named (as a concept).
<i>Abstraction</i>	Concept involves some degree of abstraction and generalisation regarding its subject. Conceptual design operates on a higher level of abstraction than physical design.
<i>Instrumentality</i>	Concept prepares ideas and knowledge for implementation, structuring them into an instrument of change and development. Concept seeks to integrate thinking with making.
<i>Holisticity</i>	Concept simultaneously addresses a whole and its constituent parts, bringing them into a relationship. It is often heterogeneous composite of abstract and concrete.
<i>Prescriptiveness</i>	Concept is <i>of</i> something, presuming a subject outside of itself that it precedes, refers to or is imposed on. Concept as an underlying draft, template, prescription or code guides the actualisation of its subject.
<i>Imprecision</i>	Concept does not completely describe or determine its subject or outcome but works on reduction and simplification, concentrating on relatively few key variables and leaving others open.
<i>Transferability</i>	Due to its abstraction, concept can be manipulated independent of its subject and any of its specific outcomes. It can be disembedded from its origin and transferred into new subjects and locations.
<i>Generativeness</i>	Concept is open and dynamic in that it has multiple possible outcomes. It has the capacity to act as a generative device that breeds entirely new ideas and creative outcomes.
<i>Mediativeness</i>	Concept is a mediative and integrative object on its own that facilitates commitment, collaboration and communication across social boundaries, translating and aligning divergent knowledge.

Conceptual design and concept design, its more concrete variant, target the abstract “structures” of which variable material “configurations” are derived (Habraken 2000) – the “codes” behind specific “constructions” (Perkins 2000). Concept design mediates between strategic and product design, translating strategic goals into viable format. Concept in design has both a descriptive and a discursive role. It is a tool for isolation, standardisation and compression of essential design information so that it can be transferred across systemic borders and to multiple locations. As seen, concepts have various degrees of rigidity ranging from near-abstract design idea to fixed template governing the delivery of a product. A concept can address different parts of a product, and several types of concepts can contribute to the realisation of a product. Concepts can originate from and be driven by design, technology, marketing, the users, and so forth.

The commodification of housing and introduction of commercial housing concepts as means of differentiation in the market is leading to emergence of concept design as practice in the housing industry. At the same time, social and technological change suggests the need for partial reconceptualisation of dwelling as a product and object of design. A more conceptual and strategic approach to housing design potentially could help in resolving some of the systemic barriers for diversification of housing, and facilitate the reconciliation of the demands of users and producers. In Chapter 4, these insights are deepened by analysis of the present Finnish housing concepts.

### 3 . 4

## Understanding the productness of dwelling

In order to comprehend what the conception of dwelling as a composite, systemically embedded, adaptive product in the context of design means in a more material sense, we now need a closer look at the concrete consistency of dwelling as an artefact and at the conditions of its change. In the following, I will outline three theory-based frameworks that shed light on different dimensions of the dwelling product and will later be used as templates for analysing the empirical data. I will approach dwelling as a hierarchically layered systemic artefact, as a differentiable product in the market, and as an evolutionary realm where change builds on precedence.

It is acknowledged in systems theory that the architecture of complex natural and artificial systems is hierarchical (Simon 1996, 128; Checkland 1981, 78). Complex systems are organised in a hierarchy of levels where components enclosed within higher-level components perform particular subfunctions that contribute to the overall function of the system. Each level in a system is more complex than the one below and is characterised by emergent properties that do not exist at the lower level. A systems outlook to the environment assumes that coherent wholes cannot be reduced merely to an aggregate of their components. According to Checkland (*ibid.*, 81–83), systems hierarchies are characterised by processes of control operating at the interfaces between levels. There is communication in the form of instructions or constraints between levels that yields the activity at one level meaningful at a higher level. The ideas of hierarchy, emergence, communication and control are key to understanding complex systems.

My framework for analysing the physical dimension of the dwelling product relies on John Habraken's (2000) theory about levels of control in the built environment. This is complemented by Stewart Brand's (1994) writings about the temporal hierarchy of buildings. Habraken is an influential scholar behind open building. Brand's ideas are very similar albeit more grounded in the American vernacular tradition. Both discuss the material hierarchy of the built environment and the control of users and designers over it in time.

Habraken (2000) sees the built environment as a continuously changing organic entity comprising not only forms but also the people acting on them. He describes the material world as a complex "environmental game" where human agents (individuals, organisations and institutions) and built matter interact over time in pursuit of equilibrium between the aims of a large number of agents. For explaining the rules of the game, Habraken proposes a theory on "levels of control". He states that the environment is composed of hierarchic physical levels that also constitute domains of control. By control is meant an agent's ability to transform some part of the environment. Habraken maintains that we innately perceive the built environment as configurations, that is, groupings of elements defined by their parts. The configurations in an environment organise onto clearly recognisable levels, developed in response to local culture and technology that parallel the environment's hierarchy of control. The levels are revealed by changes taking place in the environment and can be deduced by observing the

built form. Levels represent agents who operate on different levels depending on what part of the environment they control. This is made evident by the stratification of design professions (ibid., 24):

*Each level connects to a professional domain of intervention, which in turn defines both a way of acting and the expertise needed to manipulate and arrange particular parts. [...] Professional agents – urban designers, architects, interior designers, and furniture designers – each focus on certain levels. This division of professional expertise confirms and reinforces the hierarchical organization of the physical form: the game creates the professional player.*

Habraken (ibid., 60–61) outlines a hierarchy of five levels of form that according to him is sufficient to classify variation in forms of habitation. The levels, from lower to higher, are body and utensils, furniture, partitioning, building, and road network (Figure 8). Each lower level is enclosed by the configuration of the higher level so that they form a nested hierarchy. The levels here denote classes of physical parts ("partitioning"), but could also be identified as configurations of such parts ("floor plan"), or as the type of space resulting from the configurations ("room"). In this way, space and material configurations that make it up are inseparable. Habraken notes that spatial wholes as experienced by us are in fact conjunctions of two physical levels. A room for example combines the partitioning and furniture levels. Naming of the levels necessarily means partial reduction, as forms carry multiple meanings and serve many purposes. There are many possibilities for identifying the levels in a given environment. The model provides a tool for unscrambling the assembly hierarchies of various environments that can be adapted to different purposes. Levels can be added, removed, subdivided or re-divided according to the specific forms of dwelling under investigation. (Ibid., 66.) The model thus offers an instrument for analysing the dwelling product with adjustable focus and precision.

Habraken calls those parts of the environment actively under the control of a single agent "live configurations". The furniture and partitioning in a dwelling are a live configuration controlled by the owner, whereas to designing architect the partitioning and building levels comprise one. The control of an agent operating on the level of road network, on the other hand, does not extend to individual buildings. Actors on each level thus perceive the same part of environment differently – "as broad context or background, specific level

of intervention in question, or a configuration residing within a larger intervention" (ibid., 23). Control in the system can be distributed horizontally on a single level or vertically across levels. Figure 8 shows the extent of occupant control in various modes of dwelling.

A key principle in the built environment is avoidance of direct horizontal relations between live configurations. Formal means such as walls and social agreements such as ownership and civility prevent direct interaction between dwellings so that people can co-exist on the same level of form without too much conflict. Importantly, higher-level configuration dominates the lower level, which in turn is dependent on it (ibid., 32). Dominance is imposed by both physical form and behaviour of agents. Road network demarcates the space for a building, structure of the building sets limits for its spatial partitioning, partitioning governs the disposition of furniture, and furniture acts as support for body and utensils. Similarly, agents on higher levels determine the framework for the actions of lower level agents. Control distribution does not always precisely follow physical levels. This is the case in housing companies where some parts of the building although owned by individuals are not fully under their control.

Change in the environment according to Habraken (ibid., 42) "reverberates from downward and is contained upward". Owners can relatively easily modify the interiors of dwellings. Transformation of higher-level forms is more difficult and slow because it necessitates consensus with many actors. Even if the levels determine what agents do, interaction among agents may also affect the hierarchy of levels. Open building is an example of renegotiation of control where the resident is given power to transform a higher level of form than in a customary apartment house. This is made possible by separation of support and infill levels in the building. In this way, levels of form keep transforming.

Habraken (ibid., 71) underlines that dwelling as activity is not tied to any single physical level. Dwellings comprise varying combinations of levels and most acts of inhabitation can be individually accommodated on various levels. He mentions kitchen cabinetry and equipment as an example of a system that has gradually migrated away from the building level and become an independent configuration at the partitioning level that can be individually composed and is manufactured and sold like other durable goods. Similar migration towards an independent level can be detected in technical systems. Open building and mass customisation are facilitating the emergence of a flexible "mass-market infill level"



that restores part of user control on the level of inhabitation (ibid., 66). The Finnish housing concepts show some examples of this. Habraken (ibid., 78–80) emphasises the importance of furniture as “readily manipulated, instantly revised” level of form where “manufacturing reaches the dweller directly without any need for specialized intervention”. The furniture level is closely tied to less durable goods.

The above demonstrates how industrialisation and consumerism are driving the commodification of concrete physical parts of dwelling. Increasing number of elements and subsystems on various levels of dwelling are being distinguished as autonomous “products” that can be differentiated by design and sold to people as replaceable consumer goods. Growing technical complexity of dwellings also adds layers to their hierarchy. These changes often require redistribution of control and pose a challenge to existing design professions hanging on to their traditional hierarchy. With design control dispersed among a growing number of agents, dwellings can increasingly rarely be treated as singular design objects. The present conditions have rendered obsolete the idea of total vertical design control that was a central objective in modernist architecture (ibid., 74):

*With ongoing industrialization and systematization, building design is increasingly a matter of selecting and combining systems. The range of system components and rules about how they combine are predetermined. Partitioning systems, sanitary and kitchen equipment and cabinetry, and furniture and lighting systems result from long-range product development and marketing, far beyond the reach of any single intervention, or any designer's desire for innovation. To a great extent, such systems now set the terms of the design game.*

Habraken puts forth that ordinary mainstream housing is experiencing a largely unplanned and unremarked “silent industrialisation” from within, resulting from dispersed, disintegrated development of its individual subsystems and components, rather than from any integrated systems design. This process, he claims, has not been informing architectural practice. Much of it happens out of the control of architectural design. Habraken pronounces it a misconception that industrialisation as such would be driving uniformity in housing. He argues that *centralised design control* has been a more determining factor. (Ibid., 271–273; cf. Sohlenius 2006.)

Within the material hierarchy of built environment, patterns, types and what Habraken calls “thematic systems”

act as shared “forms of understanding” that convey agreement between agents and suggest how parts are to be combined into meaningful wholes (ibid., 248–249). Patterns (cf. Alexander 1979) are consistent relationships between two or more parts that help structuring the environment and determine how the parts are used, such as typical window patterns in buildings. Type as understood by Habraken results from combination of familiar units of space and form in a socially determined manner (ibid., 278). It is created by continuity and repetition over time. Thematic systems, such as building or car, have developed in response to specific human needs. They rely on a basic “structure” of which variable “configurations” are derived, leading to thematic development over time. Both the structure of the system and each configuration are independent artefacts that can be transformed (cf. Perkins 2000). Along these lines, dwellings as artefacts represent variants within the thematic system of dwelling.

An important aspect of thematic systems according to Habraken is that they travel among people. Dematerialised conceptual systems in building that are being sustained in social and technological networks represent “knowledge without words” and “profound abstract understanding without material specification” that facilitates the work of professionals but is also shared by laypeople (ibid., 261). Selection of a system logically entails a host of details and specifications without the need for further invention (ibid., 298). As an example, the existence of a jointly understood basic configuration of dwelling diminishes the need for explicit agreement on each design decision in housing production. Design to Habraken is “cultivation of the built field” through the creative harnessing of socially rooted systems, types and patterns rather than sudden innovation disconnected from existing forms.

The hierarchic organisation of environment is attested in environmental psychology, where Gibson (1986, 9) uses the term “nesting” for describing how things are components of other things and how smaller units in the environment are embedded in larger ones.

Aldo Rossi (1982) has written about the city as a collective “conglomerate artefact” to the construction of which all its components participate. He sees dwelling as the primary unit in cities. Dwellings as material representations of people’s way of life to him are closely bound up with the urban form. This means that there is a spatial continuity between various levels of the city, and that dwelling as its basic component to a high degree influences the forms a city takes. Therefore, suggests Rossi (ibid., 72), “the study of the individual dwelling offers one of the best means of studying the city and vice versa”. Rossi

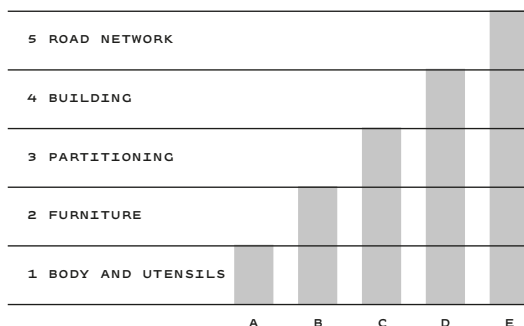


FIGURE 8.

Levels of form in the built environment and the extent of user control in various modes of dwelling (Habraken 2000, 61). From the left:

- (A) hotel room,
- (B) rented flat,
- (C) owner-occupied flat,
- (D) freestanding urban or suburban single-family dwelling, and
- (E) private estate or farm.

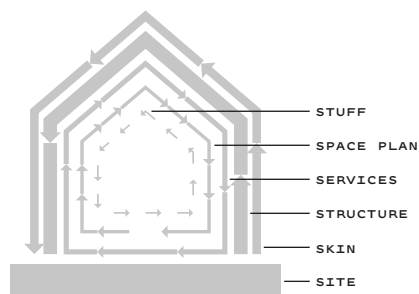


FIGURE 9.

The pace layers of a building (Brand 1994): Site, structure, skin, services, space plan, and stuff. "Because of the different rates of change of its components, a building is always tearing itself apart"

distinguishes between housing as collective structure that is a permanence in cities, and individual buildings that tend to change. He stresses the special relationship between a building and its site, which together constitute what he calls *locus solus*, a singular place whereby the individual built artefact is situated as part of the city. Architecture as understood by Rossi gives form to singularity of place. Unique place with its characteristics and history in this way becomes one component of buildings.

Stewart Brand (1994), relying on previous work of some other scholars, has introduced the notion of 'pace layers'. He proposes that a building can be divided into layers with different rates of change, the slow elements dominating and constraining the fast ones. Brand's six layers (*ibid.*, 13; see Figure 9) are *site* (the geographical setting, urban location and plot), *structure* (foundation and load-bearing elements of the building), *skin* (exterior surfaces), *services* (technical systems and utilities serving the building), *space plan* (the interior layout), and *stuff* (domestic objects and appliances)<sup>12</sup>. Site is eternal, and structure persists from several decades to hundreds of years. Skin is more mutable and may in some houses change every 20 years or so, whereas services wear out in a shorter time. Commercial interior space changes in a rapid cycle whereas "exceptionally quiet homes might wait 30 years". Stuff is moved around daily or monthly.

Similarly to Habraken, Brand (*ibid.*, 17) notes how pace layering legitimises the design professions with their agendas stratified according to the time scale. The layers also

12.

Fixed furniture and equipment such as kitchen and bathroom furnishings that Habraken considers independent configurations at the partitioning level to Brand (1994, 19–20) constitute an emerging intermediate layer of "service-connected stuff". Leupen (2006a) divides a building into the layers of structure, skin, scenery (interior partitioning), services, and access (circulation spaces).

define how buildings relate to people. At the level of stuff, a building interacts with individuals, and at the space level with the family or owner. Services and slower levels that need to be maintained are where the housing company or landlord comes into play. The skin is the building's interface to the local public, and the whole community via authorities partakes in defining the footprint and volume of the structure and the restrictions on the site.

Like with Habraken's levels, the slow elements constrain and control the quick ones. The slow processes are also capable of integrating trends of rapid change within them. Changes proposed by faster components gradually filter down the structure as they are accommodated by slower components. In buildings, "[t]he quick processes provide originality and challenge, the slow provide continuity and constraint" (ibid., 17). The differing rates of change of its components are causing friction between the layers of a building. Resolving the friction according to Brand is crucial to the development of buildings. He proclaims it a design imperative that buildings should allow slippage between the differently paced layers, so that the slow systems would not "block the flow of the quick ones, and the quick ones tear up the slow ones with their constant change" (ibid., 20). Structurally disentangling different pace layers from each other can achieve this. Brand (ibid., 23) suggests that either a "high road" or a "low road" strategy is available. High road buildings are highly refined durable constructions such as historical manor houses. Low road houses are flexible and cheap spaces such as garages and lofts that respond to changing needs of their occupants and can easily be altered by them.

Somewhat contrary to Habraken, Brand claims that fragmentation of design control and marginalisation of the role of the architect in commercial building is having a stagnating effect on buildings, hindering their adaptivity to change. On the other hand, so do totally designed, embedded systems. Brand calls for better employment of time as a tool in design and use. This would mean thinking of buildings less as complete artefacts and more as open-ended "strategies" with built-in adaptivity that allows changing uses and perpetual adjustment during use. Many design decisions could be postponed and left to the users. This requires transformation from "image architecture" to error-tolerant "process architecture"; "an architecture that, when the users decide to put it to different uses than those originally envisaged by the architect, does not get upset and consequently lose its identity" (ibid., 71, quoting Herman Hertzberger). To Brand, dwelling is a continuous learning process where physical forms and people interact.

LEVEL OF FORM	SUB-LEVELS AND/OR EXAMPLES OF DESIGNABLE ELEMENTS	DESIGN CONTROL	CONTROL DURING USE	RATE OF CHANGE
AREA	Location, urban environment, connections, local facilities	Urban planners, architects	City	(Eternal)
BUILDING	<i>Building</i> : Building type, form and structure, other features	Architects, building and systems engineers, landscape architects	Housing company	20–300 years
	<i>Facilities</i> : Joint facilities indoors and outdoors, building services			
APARTMENT	<i>Partitioning</i> : Spatial organisation and functions, walls and openings	Architects, interior architects, product designers	Owner	3–30 years
	<i>Furnishings</i> : Surfaces, materials, fixed furniture and equipment			
OBJECTS	Furniture and other domestic objects	Furniture and product designers	Owner, occupant	Continual

On the basis of Habraken and Brand, I have revised a framework for approaching the empirical data that can also be seen as a tentative model of dwelling as a designable product (see Figures 10 and 11). It comprises four main physical levels (objects, apartment, building, and area) that form a scale from private to public (faster to slower) and follow the control distribution in Finnish housing. In owner-occupied urban housing, objects and apartment constitute the private realm controlled by individual users. The building level is controlled jointly by members of the housing company, whereas area, the urban landscape, is under public control. The apartment and building levels have both been divided into two sub-levels to get a more detailed picture. Each level is distinguished by different rate of change and different controlling agents during both design and use.

The positioning of technology, services and other less tangible components of dwelling in the physio-spatial hierarchy raises some questions. The model seems to have limitations in representing those aspects of the composite dwelling product. Habraken (2000, 112–117) notes the ubiquitous presence of technical systems entangled within buildings. In everyday life, these systems often go unregistered, only experienced through the equipment that they serve, even if they significantly influence the formation of built environment. Software and digital components in homes comprise a further level of technology that is less dependent on physical form.

Technology seems to exist on all levels of the built environment in different forms and with varying degree

FIGURE 10.  
My division of the main physio-spatial levels of the dwelling product, based on Habraken (2000), Brand (1994), and the distribution of control in owner-occupied blocks of flats.

of integration, constituting an independent domain of design and development that penetrates the built hierarchy. Indeed, that is how later research has complemented Brand's model (Rodden & Benford 2003). This has led me to assume that not only technology but other meaningful designable elements of dwelling as well would be similarly distributed. The dwelling product is essentially a spatially organised configuration where the physical hierarchy integrates together various other product domains. Even immaterial elements such as tenure in some way relate to the physical form. Figure 11 shows a preliminary framework where the physical levels are permeated by other elements of the expanded dwelling product tentatively deemed as relevant (technology, services, community and "ownership"). Some of these may be embedded into the physical form. For analytical reasons, they are here highlighted as separate entities. This helps in detecting the expansion of the dwelling product beyond built structure.

This suggests perceiving the dwelling product as a hierarchically organised composite of multiple (co-dependent and interlocking) parts with different degrees of materiality. Some parts of the product are more congealed (stable, shared, slowly changeable) and some more fluid (flexible, personal, rapidly changeable). There is continuity between the levels and parts, and communication between the agents in control of them, usually dominated by the upper level in hierarchy. Embedded within and also partly beyond the hierarchic physio-spatial structure are other designable elements of dwelling potentially of great significance to users that may not always be recognised by the housing design system because they lie outside of its present tasks and way of framing dwelling as product. Meaningful transformations of dwelling can take place on different levels. Many elements of the extended product from domestic devices to services and tenure forms can be an object of design and diversification. This model gives us a rough framework for analysing the material composition of the dwelling product later in the study.

FIGURE 11.  
A preliminary model of dwelling as a designable product. Hierarchically organised physio-spatial levels of the built environment are permeated by other designable elements of dwelling.

### 3.4.2 DWELLING AS A DIFFERENTIABLE PRODUCT IN THE MARKET

According to economist William T. Bogart (1998, 275), housing as commodity is distinguished by five characteristics: heterogeneity, immobility, durability, high expense relative to income, and large adjustment cost. Many other goods share some of these characteristics, but none all of them. Housing is a special durable goods comprised as composite of tangible

SLOW, FIXED ELEMENTS  
Central control

	PHYSICAL FORM	TECHNOLOGY	SERVICES	COMMUNITY	OWNERSHIP
AREA	Location, the urban environment	Technology infrastructure	Local services in the area	Citizens, local community	The market, local offering
BUILDING	Building form and structure, joint facilities	Building services and equipment	Joint services, service models	Neighbours, the housing company	Tenure forms, management models
APARTMENT	Spatial design, partitioning, furnishings	Home technology, fixed appliances	Services for individual households	Household, family	Cost, funding, user control
OBJECTS	Furniture and other domestic objects	Movable devices and appliances	Services related to objects	Individuals	

PRODUCTION  
Standardisation, duplication

USERS  
Diversification, personalisation

RAPID, FLEXIBLE ELEMENTS  
User Control

and intangible properties. It is used over a long period of time, surviving many uses and user generations. Housing, as opposed to most other products, is both a public good, residential buildings constituting a considerable share of national wealth, and a private commodity, playing a major part in the economies of households. (Laakso & Loikkanen 2004.) Housing is produced and consumed on the open market, with the exception of social housing that is partly decommodified (Lapintie 2010b, 54).

Housing is also a basic necessity that the society seeks to provide to all. The price of free-market housing is determined locally and nationally and influenced by prices of loans and the market situation. For consumers, housing is both a form of consumption and, in the case of owner-occupied dwelling, an investment. (Juntto 1990, 17.) A housing market is local and thin. People are forced to buy what is in the market and to make compromises. The market is a “second hand shop” (Paadam 2003): the majority of dwellings are purchased as used and modified by owners during use. New dwellings on the other hand are often sold before being built. What further distinguishes housing from other industrial products are housing companies as a form of shared ownership. Moreover, owners and renters are in a different position in relation to the product. The production process of housing relies on one-of-a-kindness, site production and temporary production organisation, all contrary to the ideals of mass production (Groák 1992, 126).

Apart from obvious differences there are similarities between housing and other industrial goods, as discussed in the chapter about commodification and illustrated by the housing concepts. It seems justified to draw on generic models of product in marketing to analyse this facet of the ‘productness’ of dwelling. Marketing research defines product as “[a]nything that can be offered to a market for attention, acquisition, use or consumption that might satisfy a want or need”, including physical objects, services, persons, places, organisations and ideas (Kotler et al. 2008, 500). A product can be divided into *core product*, *actual product* and *augmented product* (ibid., 501–502; see Figure 12). Core product consists of the (intangible) problem-solving benefit(s) that the product provides to the customer. Actual product is made up of the product attributes that combine to deliver the core benefits, such as the product’s parts, quality level, features and capabilities, design and styling, brand name, and packaging. Augmented product includes additional customer services and benefits built around the core and actual products, such as delivery and credit, installation, after-sale service, warranty or personnel.



The term “value constellation” (Normann & Ramirez 1993) refers to the network of actors that jointly create these offerings. Each level in the product adds more customer value. Product hence is more than a set of tangible features. As argued by marketers, people see products as complex *bundles of benefits* that satisfy their needs. Dwellings have been perceived as pure tangible goods. Addition of the component of service to them in market-oriented production in fact has made them *good-and-service combinations* even if the tangible part still dominates. Service<sup>13</sup> is typically linked to the sale of the physical good but may also be connected to the use phase as in senior housing with care services. Along the lines of Kotler et al. (2008, 598), the dwelling product like other industrial products can be placed on a tangible-intangible continuum where many combinations are possible.

Product differentiation and positioning are key means for producers to seek competitive advantage in the market. The product’s position, “the place the product occupies in consumers’ minds relative to competing products”, depends on how it is defined by consumers on its important attributes (ibid., 432). Differentiation means the marketing of generally similar products with minor variations that are used by consumers when making a choice (“product differentiation”, Oxford Dictionary of English 2010). It deals with distinguishing products from those of competitors as well as from other products of the company in order to make them more attractive to particular target markets.

The differentiation process involves identification of possible customer value differences that provide competitive advantages, selection of the right set of differences upon which to build the position of the product, definition of the overall value proposition of the product, and effective communication and delivery of the chosen position to the market (Kotler et al. 2008, 435). Some physical products allow little meaningful differentiation whereas others (cars, clothing, furniture) are highly differentiable. It is important to find those points of differentiation that are most valuable to customers and make a good differentiator in the market. What differences are promoted can be based on their importance, distinctiveness, superiority, communicability, pre-emptiveness, affordability or profitability (ibid., 441). Products in the market are thus constructed as differentiated sets of clearly communicable and marketable benefits.

Differentiation strategies can be divided into price differentiation, innovation-based differentiation that targets the product’s performance, uniqueness, features, reliability, durability, serviceability or aesthetics, and marketing

13 .

Kotler et al. (2008, 597) define service as “[a]ny activity or benefit that one party can offer to another which is essentially intangible and does not result in the ownership of anything”. Services are characterised by intangibility, inseparability from their providers, variability and perishability.

differentiation that focuses on product image, promotion, service, delivery, installation or maintenance (Swink 2000). Product design and the manufacturing process are in a key role when delivering the first two types of differentiation, whereas marketing differentiation is less determined by them. Many companies are nowadays seeking to differentiate their offers by creating and managing holistic customer experiences (Kotler et al. 2008, 500). It has already been noted how the consumer society relies on marginal differentiation of products and how companies increasingly aim to charge for immaterial experiences and benefits provided by products (Pine & Gilmore 1999). This emphasises the role of non-material elements such as brand, service and customership in differentiation.

Modular product platforms that enable the making of highly differentiated products that yet share as many components as possible are one means for managing the trade-off between distinctiveness and commonality in mass production (Ulrich & Eppinger 2004, 184). In *delayed differentiation*, differentiation is postponed until late in the supply chain. The product and production process are designed so that a few differentiating elements can be added to the product near their completion (ibid., 179–180). The interior fit-out options in free-market housing production are examples of delayed differentiation.

From the premises of this study, product differentiation in the housing industry can be seen as strategic design activity that falls outside of the scope of regular housing design, dealing with positioning of designs in relation to other designs in the market and with creation and management of product portfolios. Housing concepts as means of differentiation in the market are discussed in Chapter 4. Differentiation in the built environment also happens on the level of neighbourhoods and cities. As argued by Madanipour (2003, 150–161), the urban space is increasingly treated as differentiable commodity. The creation of clearly signified, differentiated neighbourhoods serves individuals in their quest for identity and social status, developers in distinguishing their products, and cities in competition in the global marketplace. Differentiation in the city can be imposed from above by urban management and market operation, or arise from below as collective activity grounded in local culture (ibid., 158; Klingmann 2007).

This also brings us to the limits of examining dwelling as a market-driven product. Total commodification of the living environment would threaten the self-determination and equality of citizens and is against the goals of public housing policy. Residential product differentiation may also

contribute to social segregation in neighbourhoods and cities. The methodological shortcomings of the product approach are summarised in Chapter 6.4.

Dutch researchers (Eger & Drukker 2010) have proposed that most industrial products follow a similar pattern of qualitative change during their development in time. Analysis of a product's history and its present "internal state" thus makes possible predictions about its future "career". Eger and Drukker distinguish six qualitative product phases, each displaying typical product and market characteristics (Figure 13). When a new product comes into the market as result of innovation or technology push, most efforts initially go to ensuring its *performance*. Design at this point is less important. After basic functional issues are solved, emphasis shifts to *optimisation* of the product along objectives such as ergonomics, reliability and safety. This leads to gradual consolidation of a "dominant design" and increasing consumer awareness. In the third, *itemisation* phase the product is distinguished as an object of consumption in the market. The edge of competition shifts to convenience of use, and design becomes more important. As the competition grows, producers move to *segmentation*. Design here focuses on adding expressive features and emotional benefits to products. Fifth phase in the evolution of products is individualisation enabled by mass customisation and co-configuration. The pinnacle of a product's career as outlined by Eger and Drukker is *awareness* where focus of consumers and producers shifts to ethical aspects of products and their entire life cycle.

Eger (2009) suggests that this model would also apply to housing. His brief survey on the history of working-class housing in Europe asserts how it as product has evolved from an early unregulated stage in the 19th century to introduction of regulation, establishment of a dominant architectural design, branching off into local, segmented variants, and increasing stylistic diversification and user orientation. One must, however, be aware of the limits of the model in explaining the long-term, large-scale historical development of a complex structure like housing. The development of modern housing has coincided with a significant rise of living standard and major social and technological changes.

To sum up, paralleling dwelling with other industrial products makes visible certain characteristics and designable elements of it that are not revealed by examining the built artefact. Dwelling as it is developed and marketed by the industry resembles other durable consumer goods in that it is constructed as differentiated sets of benefits that are delivered through varied means ranging from product image to

customer service and the production process. It would also look like the overall historical development of industrial urban housing would at least to some extent follow the regularities of other industrial products.

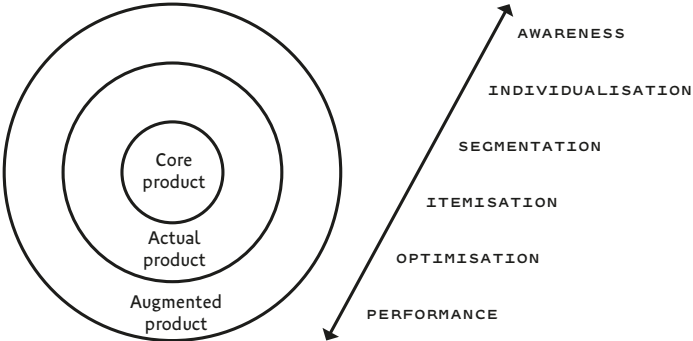


FIGURE 12.  
The three levels of product  
(Kotler et al. 2008, 501).

FIGURE 13.  
The qualitative  
product phases (Eger  
& Drukker 2010).

3 . 4 . 3

DWELLING AS AN  
EVOLUTIONARY REALM

What the theories discussed in previous chapters have in common is the inclusion of *time* to the analysis of artefacts. Many properties of housing and dwelling depend on temporal processes of different scale and scope. This concerns both the cycles of everyday living and the transformation of dwelling as artefact. Keeping in mind the systemicity of the dwelling product and deep anchoring of it to tradition, it seems justified to approach dwelling as an *evolutionary realm* where transformation at large happens gradually through adaptation based on precedent. The term evolution is often used vaguely in literature. There exist many “evolutionary” theories related to architecture and artefacts, an overview of which is given by Philip Steadman in *The Evolution of Designs* (2008 [1979]). Stephen Marshall in *Cities, Design and Evolution* (2009) has developed evolutionary thinking on urbanism. Also technological innovation has been explained as an evolutionary process (Ziman 2000). The approaches share the idea of evolution as effect that applies to human-made artefacts and biological organisms alike.

Dwellings from systems perspective can be seen as complex adaptive goal-oriented artefacts that are moulded by their environment. The adaptation of artefacts to goals as described by Simon (1996) involves appropriation between the inner substance and organisation of artefacts and their

outer environment. Intentionality and purposefulness is what characterises artefacts. Along the lines of Checkland (1981, 119), dwelling as a “designed physical system” that exists to serve a human purpose and results from willed choice by human beings ought to be distinguished from natural systems formed by blind evolutionary forces.

Despite this fundamental difference, there are grounds for paralleling the development of the two, laid by scientists like Richard Dawkins (1976, 206) who famously argued that “all life evolves by the differential survival of replicating entities”. According to Dawkins (cited by Dennett 1991, 200), the process of evolution naturally occurs when three conditions co-exist: “variation, or the introduction of new change to existing elements; heredity or replication, or the capacity to create copies of elements; and differential ‘fitness’, or the opportunity for one element to be more or less suited to the environment than another”. The conditions are met in housing: the forms of dwelling are being replicated by the housing production system as different variations that undergo selection by users (the market) and the housing system based on their “fitness”.

Loosely evolutionary analogies or metaphors work in dwelling on many levels. The historically evolved socio-cultural model of home that sets expectations for its design is being reproduced as endless individual variants and carried on by the repetitive and selective practice of everyday living. Dwellings as physical artefacts have evolved along other levels of built form to adapt to human experience and divergent local conditions (Habraken 2000, Rossi 1982, Groák 1992). The history of housing reveals lineages of descentance leading to present dwelling types (e.g. Saarikangas 2002). Locally available forms of dwelling that are replicated by the production system are outcome of collective selection by multiple actors (e.g. Groák 1992). Individual dwellings “evolve” further when changes are made to them during use (Brand 1994). Types and features of dwellings can be seen as genetic material that travels across time and place (Steadman 2008, Moraes Zarzar 2003). As seen, the internal state of products has been suggested to undergo evolutionary change during their life cycle in the market (Eger & Drukker 2010).

Steadman (2008, 76–78, 218) examines the Darwinian analogy of human manufactures adapting by trial and error as one of many biological analogies in architecture and the applied arts. At simplest, this means that artefacts like buildings or dwellings are copied from old models and put to the test of use. For example, a new building is often designed as deviation from a reference building or part of

a building. The designs that prove advantageous tend to be preferred as models for new artefacts. Variety here can be outcome of “unconscious variation through accidental inexact copying” or conscious incremental enhancement. The analogy suggests that artefacts themselves carry information about their own functioning and manufacture and that “[...] there exists in the mind of the craftsman in some form the type, or image, or model for a species of artefact, which guides him when he comes to make a new copy” (ibid., 78). Copying induces continuity in the form and appearance of the artefact and brings about a transformation of its characteristic form as a result of alterations in each stage. Production of many similar artefacts with related but not identical forms gives rise to geographically diffuse “populations” of artefacts, amongst which it may be possible to identify “types”.

This kind of evolutionary process requires a long period of time without major changes to the function of the artefact. Steadman argues that what is transmitted in copying is the “general type” or “abstract design” of which a singular artefact is but one example. This corresponds with the distinction between genotype and phenotype in biology. The socio-material general type of dwelling then would act as set of “genetic instructions” for reproduction of dwellings within the housing system. From evolutionary viewpoint, individual dwellings can be seen as outcome of (social, economic, geographical, political, technological, designerly) selection pressures operating within a variable population of dwellings integrated through time by descent (cf. Fleck 2000, 250).

Variation and selection in artificial evolution are intentional and goal-directed. Designers can decide what to try and to select and are capable of analysis, foresight and revision of designs. In human systems, available knowledge, way of framing the design problem, agents’ capacities and skills, and the course of the design process affect the outcome. In contrast to organic evolution, artificial evolution has a convergent capacity. It can bring together previously separate types or combine parts from several artefacts (Steadman 2008, 97–98). Steadman distinguishes between the slow, unconscious evolution of vernacular architecture and artefacts, disrupted in modernity, and evolutionary approaches to design that seek to consciously apply evolutionary principles and methods to design and so mimic the evolution process in much shorter time.

In fact, the design process in general is evolutionary. It proceeds in cycles of form generation and testing against requirements and constraints, leading to a design that is supposed to best meets its purpose in its

environment. Testing of artefacts in the professional “self-conscious” design process happens not by making and using but in the mind and by means of externalised models such as drawings. This according to Alexander (cited by Steadman 2008, 176) is a major cause of failure in modern design practice because designers’ mental conceptions about the structure of design problems almost always are incomplete and incorrect. Steadman mentions functional and historical determinism as fallacies of the evolutionary analogy. He highlights that design activity and design problems are situational (ibid., 222). Changing contexts and purposes define artefacts, not just hereditary types and forms. Designers respond to particular problems in specific historical situations with the repertoire of materials, production methods and other means available to them at that moment.

Design activity from the evolutionary perspective can be defined as searching in a fitness landscape<sup>14</sup> where “human enquirers can cultivate change strategically” (Perkins 2000; Simon 1996, 124). Fitness in human systems is relative and socially determined. For instance, it can be based on consensus or individual choice. To use Simon’s term, search by design is more about “satisficing”, finding good enough solutions to local design problems than about universal optimisation. The goals of design in human systems are not final and variety may be a desirable end in itself (ibid.). The notion of *value* is important here. Discussing the evolution of modular designs, Baldwin and Clark (2000, 228–232) state that the mapping of designs to value can be pictured as a landscape, which they call the “space of designs”. Within this space of opportunities, *design evolution occurs when designers make local value-seeking changes to a design*.

Stankiewicz (2000) has coined the notion of “design space” which refers to the domain of possibilities within which the search for new solutions is undertaken. Products according to him are embodiments of design spaces. A design space can be used to map a corresponding fitness landscape. They have evolved along hereditary regimes that accumulate and transmit technological knowledge (cf. Geels 2002). These include the craft regime, the engineering regime, the architectural regime, and the research regime. Knowledge and skills within a regime determine the ways and limits of its search. Design spaces are structured by “design languages” (e.g. the styles and orders in architecture) and undergo change over time. Stankiewicz argues that the technological regimes are evolving “into each other”, which is leading to expansion and convergence of design spaces. The present dwelling product evidently is a conjunction of several design spaces.

14.

The concept of fitness landscape as defined by Perkins (2000, 160–161) is based on the idea that all possible forms can be represented as points in an abstract space, like on a map. “Within such a space, some forms are more ‘fit’ than others, according to whatever criteria happen to be applicable. The degree of fitness of a particular form is then represented by a ‘height’ above the corresponding point on the map. We thus construct a ‘landscape’, where, for example, a high peak would stand for a particularly ‘fit’ form. Evolutionary change can then be viewed as a process of traversing this landscape in search of such peaks.” Fitness landscape in biology contains all possible genotypes, their degree of similarity, and their relative fitness values.



One can argue that users as individuals have largely been excluded from the “value landscape” of industrial urban housing, which has led to its narrowing down and domination by producer value. Increasing demand for diversity and user-centredness of housing calls for expansion of the value base of housing production and acceptance of user value as a driving force. The housing system from an evolutionary viewpoint should seek to develop methods to strategically direct the population of dwellings towards user value.

Various strategies of search in the fitness landscape are available to designers. Perkins (2000) suggests that adaptation can happen by revision after trial, by variation and selection, or by *coding*, which combines the two. In adaptation by coding, “the search involves adaptive forms on two levels that may be called the code and the construction” (ibid., 166). Again a comparison can be made with genome and organism. The code in design can be a rough idea, sketch, blueprint, design algorithm, procedure to produce the artefact, or other set of instructions. The construction is typically a prototype or in the case of architecture more likely the actual building. There exist chains of code-construction relationships: an idea functions as a code for a sketch, which acts as a code for a prototype, whereof a blueprint is constructed that becomes the code of the final product. On all levels, the code can be revised on the basis of experience with the construction. The aim of the search (design activity) is to provide a more fit construction through adjustments in the code. There is opportunity for independent search at both the code level and the construction level. Code is much more portable and replicable than construction. It is easier to variate and modify the code than the construction. One argument in this dissertation is that *concept* in housing can be seen as one level of code (see Chapter 3.3). Regarding general strategies for achieving variation/innovation in complex modular artefacts, see Fleck (2000, 264) and Baldwin & Clark (2000, 228).

A problem in evolutionary theories of design concerns the unit of evolution. Artefacts do not breed, so what are the replicating entities that vary and are selected in designed systems like dwelling? To Fleck (2000, 251), the process requires human agents: “The genetic code for an organism is written within the organism. In contrast, the equivalent for an artefact is written outside the artefact proper, but within assemblages of people involved in producing the artefact, that is, within organizations.” De Landa (1994) identifies two kinds of non-genetic replicators in human systems: *memes* (see Dawkins 1976) that replicate by imitation and *norms* that replicate by obligatory repetition. As seen, Steadman (2008,



78) suggests that in architecture, *abstract designs* such as types of which particular artefacts are concrete realisations evolve. Moraes Zarzar (2003) insists on fragmental *design features* as the unit of evolution in architecture. Habraken's (2000) *patterns, types* and *thematic* systems could also be seen as such. Stankiewicz (2000) discusses the evolution of *design spaces* and their associated *design languages* within hereditary regimes. Finally, Fleck (2000, 260) suggests that technological evolution proceeds via reproduction of the *artefact-activity couple* (amalgam of artefact, knowledge and organisation): human productive activity, moulded by previous artefacts, constitutes a template for production of new artefacts, which again become its template. Artefacts and activity thus mutually condition each other, ensuring stability of reproduction.

Regarding the mechanics of heredity in dwelling architecture, two main lines have been recognised in contemporary design culture that relate back to early architectural theory (van Zeijl 2005, 113–116). One sees dwelling as permanent archetype, a universal image or prototype that is imitated by architects. This view is represented by Marc-Antoine Laugier's famous idea from 1755 of the primitive hut as an origin of all architecture. Another way is to approach architecture as matter of arranging objectified modular elements together into variable compositions, as propagated by neo-classicist architectural theorist Jean-Nicolas-Louis Durand in the early 19th century. Especially the latter approach, suggesting endless variation of designs based on combinatorial systems, is apparent in the present design culture with its tendency towards modularity and computer-generated designs.

Karina Moraes Zarzar (2003) has researched the re-use of design precedents in the conception of architectural designs. She introduces the notion of "design feature", a precedent component, as unit of evolution in architecture. Design features as replicating entities contain configurational instructions and instructions about suitable technique and materials. Moraes Zarzar maintains that architects draw on precedent design features accumulated over time, adapting and recombining them so that form is fitted to environmental constraints. Re-use often gives rise to design innovations. In the same way, Lawson (2004) describes how designers use precedent stored in the form of episodic schemata to tackle new design situations. In building engineering, technical solutions can play a similar role (Groák 1992, 6): "There exists a repertory of well-tried technical solutions, which provide reliable precedents for designers and craftsmen. It is the continuity by which most building proceeds, but which also enables gradual innovation."

Here can also be mentioned Darke's (1979) notion of "primary generator" and Vincenti's (1990) notion of "fundamental design concept" that act as instructions for design. The use of precedents in product design is discussed by Pisman (2003).

Art historian George Kubler in *The Shape of Things* (1962) examines the interplay of invention, replication, discard and retention in the history of objects. He sees objects as sequences, linked successions distributed in time that follow evolutionary trajectories. He claims that most objects are offspring of original "prime objects", created by replications and inventive mutations of them over time. Mere replication suffices to produce some variation because of inevitable minute differences in the production process. More profound changes require invention, which can result from meeting of previously divergent information in a way that opens up new solutions, or from "artistic" invention untied to earlier thinking. Kubler argues that replication and invention in society need to be in balance: perpetual replication leads to stagnation and overflow of inventions to chaos. When objects become less viable in their changing environment, they are gradually discarded and replaced by more viable objects. Kubler claims that the purpose of objects affects their rate of obsolescence. Useful objects that fulfil specific functions surrender more easily to new inventions than artistic objects that are retained longer because of their metaphysical value. Other objects also influence the histories of objects. The car drove the horse cart near to extinction and instigated a major change to the design of cities.

Adaptation of complex systems necessitates what Simon calls "near-decomposability": that the system is not fully joined but consists of relatively independent subsystems, each of which can adapt in partial isolation from other subsystems, so that the efficiency of one component does not depend on the detailed structure of other components (Simon 1996, 193; Steadman 2008, 173). Housing is an example of a complex system in which the "adaptive plan" is decentralised to many independent actors (cf. Baldwin & Clark 2000, 221). De Landa (1996) adds that replication in complex systems is variable. It may occur separately on different levels and modules of the system. Dwelling as product combines multiple elements and subsystems each with their own evolutionary trajectory. Distribution of the adaptive plan and possibility of independent adaptations means that some parts of the dwelling product may advance in leaps while others lag behind or are declined.

The "silent industrialisation" of housing has enhanced its technical performance but impoverished its spatial and typological diversity. It also seems that some parts of the dwelling product sustain replication relatively unchanged for

longer, while other parts change or are eradicated more easily. In this way, the socially and materially written genetic code of dwelling instructs some aspects of dwelling to stay constant and others to variate. In reflection to Baudrillard (1996), one could argue that it is the “essential” parts of dwelling related to its purpose, basic functions and core spatial configuration that remain, while the “inessential” parts depending on (aesthetic) choice tend to differentiate in response to individual desires and local conditions. Along De Landa (2003), a large chunk of dwelling then would be beyond the means of design – undesignable and undifferentiable, “naturally” accounted for by the system.

At the end of the day, it is less important to try to prove the evolutionary analogy to last detail. Stephen Marshall (2009, 171–175) sees evolution as a generic effect that can be applied to all scales of human artefacts and systems as well as to biology, even though its precise nature varies from case to case. A real evolutionary effect of adaptive transformation over time according to him is evident in the built environment even if it would not be equivalent in detail to natural evolution. Marshall approaches the city as a complex adaptive nested system whose components are partly in cooperation and partly in competition and where the order of the whole arises from interactions between the parts rather than from holistic design or planning. He suggests that the evolution of artefacts such as cities involves both “designed” and “organic” change.

The urban reality emerges out of the conjunction of local purposive interventions and non-purposive, unplanned interactions between elements and agents through what Marshall calls “adaptive emergence”, where individual actions in the environment together trigger outcomes that are different from the component actions. Cities thus can have “functional order without *overall* design but *with* individual design increments” (ibid., 175). Marshall’s view of evolution accommodates both immediate micro-scale actions and long-term, large-scale effects. Design as activity contributes to local increments of change but also to the evolution of artefacts by changing their “code” on the basis of environmental feedback.

The elements and their interactions in a dwelling are perhaps more restricted than in a city. Nevertheless, the systemic dwelling product no more than a city should be seen as a fixed outcome of a single definitive design act but an evolving entity where various design increments conjoin, some more fundamental and long-lasting than others. Consistent with Habraken and Brand, this promotes an understanding of dwelling as a product that continues to change during use (Marshall 2009, 260–261):

*In the evolutionary paradigm, designers and planners are only ever partly – only temporarily – in control. [...] [W]e know that what the city does when 'left to its own devices' is unpredictable, and no more and no less than the sum of all the interactions of the individual actors with each other and the environment. This opens the door to the recognition of the role of the people in shaping their own environment.*

Industrial housing production is based on repetition. In reference to a distinction by Shlomith Rimmon-Kenan (1980), this at worst is “destructive repetition” that produces sameness through mechanical copying. The evolutionary perspective opens up another mode, “constructive repetition” that produces difference, operating by affirmation and reinforcement (in everyday living) as well as change and variation (in design). Sameness was a central design objective in modern industrial housing. In late modernity, it has become important to find ways to create differences. As noted before, this happens strictly under the conditions of the capitalist system. Mass customisation and co-configuration are examples of production methods that aim at variable repetition without direct replication.

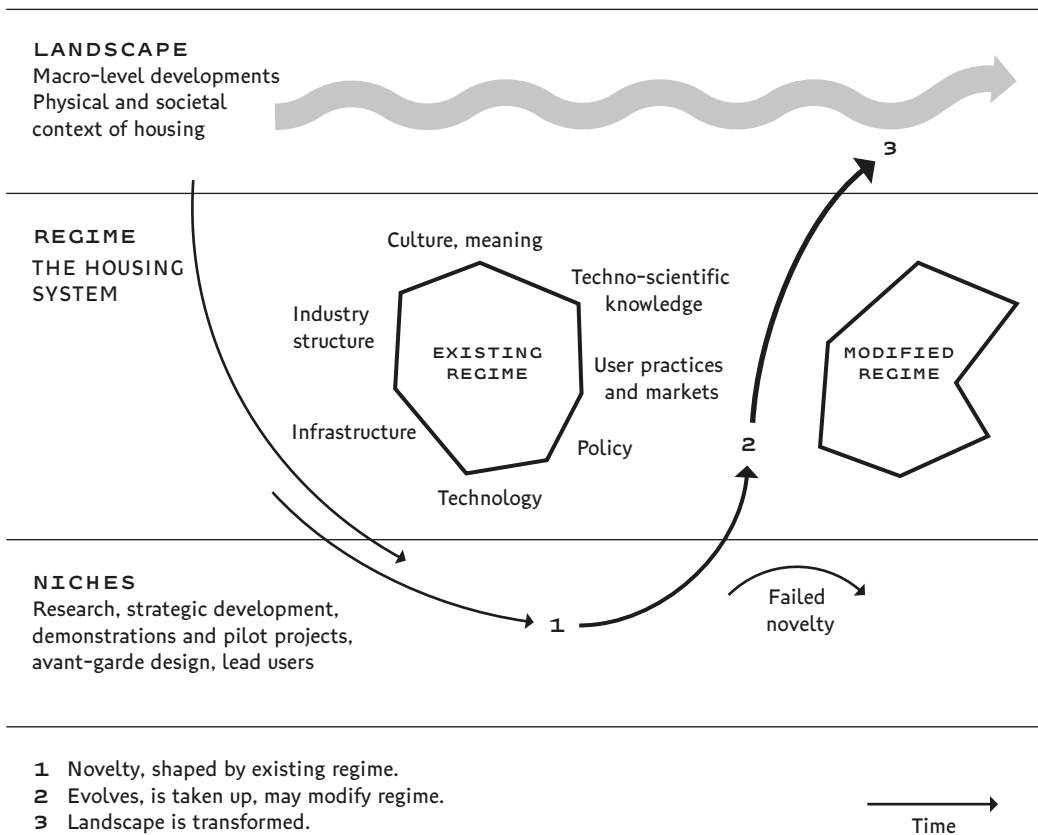
Looking at the realised dwelling products through the evolutionary lense, I have detected several “types” of difference inscribed in their features that result from different factors and processes impacting the formation of dwellings. Firstly, dwellings in various parts of the world are *culturally* diverse, which is expressed for example by their different spatial organisation. Secondly, there is *generational* difference in housing created by the overall change of housing over time. Despite typological and individual variation, the dwelling stock built in certain period is recognisably different from the dwelling stock built in another period. This “meta-style” is influenced by dominant architectural styles and design conventions, the way of building, technology and regulation. Thirdly, there is what could be called *individual* difference in housing that is consequence of the one-of-a-kindness and localness of housing design and delivery. No two buildings are the same because of changing clients, changing architects with penchant for novelty, temporary production organisations, and varied local contexts. Individual difference is partly designed, partly random variation within the range of the generational meta-style. The fourth type could be called *strategic* difference and is illustrated by the housing concepts. It is a result of intentional differentiation of dwelling products in relation to other products in the market and to the needs of various user

groups. Lastly, there is difference through *use* that results from the interaction of dwellings and residents over time. When dwellings undergo adaptations during their life cycle (become an *oeuvre*), they continue to diverge.

The overall dynamics of change within the housing system can also be explained as an evolutionary process. Research on technological transitions has proposed a multi-level perspective for understanding the process of technological change that consists of technological *niches*, socio-technical *regimes*, and socio-technical *landscape* (Geels 2002; cf. Stankiewicz 2000; see Figure 14). The three levels form a nested hierarchy: regimes are embedded within landscapes and niches within regimes. Socio-technical regimes as described by Geels comprise relatively stable networks of actors across different social groups following a common set of rules who guide and coordinate the development of various socio-technical configurations<sup>15</sup> (such as housing) to fulfil societal functions. The dimensions in a regime include technology, user practices and markets, culture and symbolic meaning, infrastructure, industry structure, policy and technological knowledge. Regimes rely on established routines and practices and favour dominant designs. Change at this level is slow and incremental, as actors are bound to resist disturbances and gain from sticking to incumbent technology. The macro-level socio-technical landscape consists of deep structural trends and other large-scale economic, cultural, social and environmental developments that set an external context for the regimes. It changes at an even slower rate than regimes.

Niches – peripheral areas protected from market pressure that allow creativity, experimentation and learning among precarious networks – are where radical innovations occur. This happens in the context of existing regimes and landscapes, which influence the emergence of niches and shape the innovations bred in them. As put by Geels (*ibid.*, 1261), “[n]ovelty is produced on the basis of [present] knowledge and capabilities and geared to the problems of existing regimes”. Some innovations challenge the existing regime while others fail. Geels explains technological transitions (major, long-term technological changes in the way societal functions are fulfilled) as evolutionary reconfiguration processes where radical innovations cumulated in niches gradually break out to regime level – often by linking up with established technologies – and, if successful, stabilise into new dominant designs along which the regime reconfigures itself, eventually leading to transformations in landscape. A new regime grows out of the previous one in an evolutionary series of adaptations

15. Socio-technical configuration is a heterogeneous set of tangible and intangible elements linked together that works to fulfil a societal function and is embedded in society. Technological transition involves a change from one socio-technical configuration to another. (Geels 2002, 1258.)



over time, such as the inclusion of new specialised actors. Socio-technical regimes can be seen as a selection mechanism in relation to radical variety generated in niches and as a retention mechanism ensuring continuity.

If housing is a socio-technical configuration that fulfils a societal function, the housing system is clearly a regime.<sup>16</sup> Innovations in housing such as new housing concepts initiated by user communities have a hard time breaking through because the housing regime is attuned to its existing ways. On the other hand, systemic selection by multiple actors in the regime makes sure that unviable and harmful innovations most often fail. The system seeks equilibrium by adjusting itself to external conditions. We can see how landscape level trends (demographic change, individualisation, digitalisation) have impacted the housing regime (instigating a tendency towards user-centredness, diversity and flexibility in housing) and fostered the emergence of niche activities around specific problems in these areas (collaborative design efforts, research on user needs). In Finland, these developments have in fact gained evidence already in the late 1970s (see Table 1). The regime has taken up some inputs but the transition to user-

**FIGURE 14.** The dynamics of socio-technical change in housing. After Geels 2002 (1262, 1263).

**16 .** As pointed out by my pre-examiner Markku Norvasuo, housing also has many "technology-external" characteristics arising from its close relationship with the basic human needs, social structure and place that in fact tie it to the landscape level.

centred housing is in progress. At present, the regime is being confronted by another, somewhat contradictory and perhaps more profound transition, that towards ecological sustainability.

The regime as discussed so far refers to the industrial housing system in general. The urban regime theory, an overview of which is given by Sari Puustinen (2010, 309–317), provides a more contextualised definition of regime. An urban regime refers to the particular form that the local governance takes in a specific urban area. The regime comprises public and private actors working for common goals such as the growth of the local urban economy. The Helsinki Metropolitan Region, as an example, would constitute an urban regime within which the realisation of housing largely depends on the local dynamics of governance. Even if my focus is not in the urban scale, the role of urban regimes in the diffusion of new housing solutions is a topic that would require attention.

To conclude with, evolutionary thinking seems relevant for understanding certain important characteristics of dwelling. Adopting an evolutionary perspective has the following implications from the three perspectives of the study:

- From a *production perspective*, it adds the dimension of time to analysis of the dwelling product and posits it as part of historical continuum where models, types and dominant designs of dwelling with distinct lineages of descent are being replicated and gradually transformed by the housing system collectively.
- From a *user perspective*, it emphasises the reciprocity between everyday living and the dwelling product (their “co-evolution”) and the inseparability of dwellings, their environment, and the actions of agents that they result from. It also highlights user value as a measure of “fitness” of the dwelling product.
- From a *design perspective*, evolutionary thinking allows the separation of the “code” and “construction” (“genome and phenotype”) of the dwelling product, that is, its abstract structure and variant material configurations, and acknowledges that both independently can be the object of design. This connects to the ideas of concept and conceptual design. In the hereditary, reproductive, adaptive material system of dwelling, *design* and *use* act as linkages between artefacts in past, present and future that transmit, instruct, generate and select form on the bases of collectively acquired knowledge, traversing the landscape of opportunities in search of value peaks.

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TAKING THE THEORIES of dwelling as a hierarchically layered systemic artefact, as a differentiable product in the market, and as an evolutionary realm as my instrument, I will now depart on exploration of the first empirical case. This section of the dissertation will give an overview of the commodification of housing production in Finland. The focus is on duplicable *housing concepts* as a special case that demonstrates the commodity aspect of dwelling and how design is used to mediate between the realms of production and users.

The exploration begins with an overview of the trends in technology and manufacturing that drive the development of dwelling as product (Chapter 4.1). To position the housing concepts in a historical continuum, I will then briefly outline the evolution of industrial urban dwelling and gradual distinguishing of it as a commodity (Chapter 4.2). After that, I will examine how commercial and other housing concepts in the market in Finland are constructed as composite, systemic products in relation to users and the hierarchy of built form (Chapter 4.3). The section concludes by discussion of the present residential product development process in the industry and the role of users and design within it, including identification of bottlenecks of diversification in the process (Chapter 4.4).

## Trends in technology and manufacturing

## 4.1.1

### MODULARITY AND SERIALITY AS VEHICLES OF COMMODIFICATION

The nature of dwelling as publicly protected basic necessity rooted in its local environment prevents its total subjugation to market forces. Yet, the dwelling product is subject to similar developments than other products in the experience economy (Klingmann 2007, Schulze 2005; see Chapters 1.3 and 3.4.2). The consumer society reaches into dwelling on many levels, of which domestic objects and interior are the most obvious. The emergence of housing concepts and brands is one indication of the commodification of housing, as is the branding of residential areas and cities.

Jean Baudrillard (1996) has examined mass produced domestic objects from a systems viewpoint. He notes that mere technological analysis of such objects is inadequate because they are not only objects in the technological sphere (and hence “essential”) but objects in the psychological and sociological sphere of needs and desires that is subjective and “inessential” (ibid., 3). Baudrillard argues that in the consumer society, objects have become vehicle of a “total systematic practice” of consumption that has little to do with the needs of consumers. Objects are powerful signs in their own right that are carefully differentiated just to be consumed. This happens by systematic construction (design, I might add) of cultural connotations at the level of objects (cf. Schulze 2005).

Baudrillard (ibid., 29) describes the consumer society as being obsessed with the perfect circulation of messages via products. He notes that simultaneous personalisation and integration is characteristic to industrial objects. Importantly, only inessential aspects of objects can be personalised: their purpose and structure are relatively fixed, whereas properties like colour and other accessory features are easier to variate. What distinguishes industrial objects from craft objects is that in the former, “[...] the inessential is no longer left to the whims of individual demand and manufacture, but instead *picked up and systematized by the production process*, which today defines its aims by reference to what is inessential (and by reference to the universal combinatorial system of fashion)” (ibid., 7–8, italics mine). This brings into

industrial objects a “secondary seriality” (ibid., 153) that can be manipulated independent of their functional essence to provoke ever new marketable connotations. This arguably also concerns market-driven housing.

*Modular components* to Baudrillard are key means for organising this. Modularisation serves the alignment of objects along manufacturing lines and isolation of specific features that can be subjected to differentiation. Also the relationship of objects to each other is increasingly modular and calculated. Concerning domestic interiors with matching standard furniture, Baudrillard suggests objects having been simplified into components of an overall “code” (ibid., 23). He (ibid., 147–161) also discusses the relationship between *model* and *series* in mass production, pointing out that serially produced objects almost always refer formally and psychologically to models (unique high-status prototypical objects). Models, previously limited to the use of the elite, have been opened to serial distribution and are being promoted by the mass media.

Consumer society as explained by Baudrillard relies on marginal differentiation of objects within the confines of serial production. This creates an illusion of personal distinctiveness and freedom of choice while actually categorising people and imposing the society and its economic order upon us. Objects rather rigidly “police social meaning”. The consumer society is also reflected in dwelling as demand for aesthetic control during use. Baudrillard (ibid., 25) describes “man the interior designer” who is not just consumer or user but an “active engineer of atmosphere” who “dominates, controls and orders” objects and “discovers himself in the manipulation and tactical equilibration of a system”. This implies “[...] a world no longer given but instead produced – mastered, manipulated, inventoried, controlled: a world, in short, that has to be *constructed*” (ibid., 28).

In reference to Baudrillard and other theorists of late modernity, it seems evident that the process of commodification also in the case of dwelling not only operates on the level of product image but impacts the physical product structure as well. The commercial housing concepts in the market illustrate how tangible designable components of dwelling come to serve the strategies of producers as they are differentiated with the aim of appealing to various consumer segments and highlighted by marketing (cf. Schulze 2005).

Manuel Castells in his influential book *The Rise of the Network Society* (1996, 70–71) states that the technology paradigm in global information society is characterised by reliance on information, pervasiveness of technology in all domains, networking logic, increasing flexibility, and convergence of technologies into a highly integrated system. Technological change transforms the dwelling product in several ways. The development of ubiquitous computing and ambient intelligence facilitates the development of smart dwellings and increases the pervasiveness of technology in domestic space.

Since introduction of the early technological innovations such as plumbing and electricity for over a century ago, the development of domestic technology has proceeded towards automation, convergence and embeddedness. Electronic devices are evolving from separate objects to remote-controlled, programmable, communicating, anticipatory and intentional devices that network to create intelligent spaces and environments. Technology is penetrating the domestic environment in the form of ubiquitous computing embedded in everyday objects and activities, inducing in dwellings an ambient intelligence that makes them more sensitive to our presence, more adaptive and more responsive. A smart home can be defined as “a residence equipped with computing and information technology which anticipates and responds to the needs of the occupants, working to promote their comfort, convenience, security and entertainment through the management of technology within the home and connections to the world beyond” (Aldrich 2003, 17).

Frances Aldrich (ibid., 34–35) describes five hierarchical classes of smart homes: homes which contain stand-alone intelligent objects, homes in which the intelligent objects communicate with one another, connected homes where internal and external networks allow control of systems and access to services and information, learning homes where the activity patterns of the occupants are recorded and the data is used to predict their needs and to control the technology accordingly, and attentive homes in which behaviour and objects are constantly registered to control technology in anticipation of the users’ needs.

The products and services in intelligent dwellings can be related to comfort, energy management, multimedia and entertainment, healthcare, safety and

security, or communication. Not only an increasing amount of appliances and equipment, but various highly computerised systems such as home automation, security, multimedia and telecommunication systems need to be fitted into buildings and dwellings as a consequence. In the future, a growing proportion of the construction and operating costs of buildings will go into sophisticated electronic components. The hardware and software components of buildings will need to be modular and removable, as they become obsolete at different rates. (Mitchell 2000, 65–66.) Stewart Brand (1994, 192) notes that designing buildings too tightly around a new technology leads to poor adaptivity and performance during their life cycle. He advocates the separation of technology from built form through lightweight and flexible solutions rather than its total integration.

When the technological complexity of dwellings grows, the compatibility and interoperability of its heterogeneous devices, networks, services and applications becomes a focal issue. To users, *control* over the settings and operations of the home is a pivotal requirement. Hence, *the user interface* as well as software of the home are being recognised as components of the dwelling and as design problems. (ibid., Bierhoff et al. 2007.) A Finnish roadmap of building automation and home automation anticipates application of open-source software, sensory technology, distributed systems, and mobile and multimodal user interfaces in housing in the near future (Nurmi et al. 2010, 80). In the long term, the development of ubiquitous technology may be leading towards virtually augmented living spaces where the digital and the physical converge (Mitchell 2000, 60).

Acceptance of new technology to the domestic sphere depends on its obvious advantages to users, overall user experience, financial viability, and adaptability to current dwellings, as well as the user's individual capacities. New products should relate to existing habits of users and stay user-determined. (Bierhoff et al. 2007, 131.) Aside from the benefits brought by technology to everyday living, infiltration of control and surveillance to our most private space raises ethical questions, and dependency on technology makes the living environment vulnerable to disturbances. Obstacles to consumer take-up of technology include unsuitability to old housing stock, high initial cost, poor usability of the solutions, and technology push by suppliers (Aldrich 2003, 29). In Finland, heterogeneity of the offering and lack of common technology platforms has slowed down the penetration of smart home applications (Nurmi et al. 2010, 55). The level of

home automation is more advanced in custom-built detached houses, where the residents themselves make the purchase decisions. In commercial housing production, services such as apartment-specific monitoring of resource use and central control of indoor conditions are slowly gaining acceptance. Future applications include ambient assisted living for seniors.

The demand for ecological sustainability is currently driving the technological development of housing globally. Another challenge faced by the construction sector in Finland and individual housing companies alike is the ageing of the housing stock, causing an upsurge in renovation needs when the bulk of housing built during the production peak of the 1970s is coming of age. When undergoing major renovation, existing houses shall be upgraded to comply with the new energy requirements.

Mitchell (2000, 67–68) envisions how distributed and interlinked digital technology that is embedded on all scale from wearable devices to buildings and cities constructs “a global market, distribution system, and agora”. Buildings of the future can be programmed not only to adapt themselves to the behaviour of the occupants and to climatic conditions, but to changes in the prices of the utilities that serve them. As they “forage intelligently for the supplies and conditions that they need in order to operate” (ibid., 62), new markets based on efficient use of resources will emerge. Mitchell (ibid., 147) sums up the principles of “lean and green” smart cities that should be applied in product design, architecture, urban design and planning: dematerialisation (substituting material artefacts with electronic equivalents), demobilisation (diminishing the need to travel by developing telecommunication and compact mixed use neighbourhoods), mass customisation (automated personalisation of products and services enabled by electronically mediated production systems), intelligent operation (sustainable use of resources through smart automation) and soft transformation (“subtle, incremental, nondestructive transformation” instead of cataclysmic change).

Negative impacts of digitalisation include polarisation between high-value and devalued places (Castells 1996). Technology is accelerating the socio-spatio-temporal fragmentation and segregation of cities. Our presence is increasingly dispersed and impersonal, electronically mediated, while the urban space is experiencing functional disintegration, specialisation, and privatisation. This is leading to “totally managed” environments that often exclude some groups of people. (Madanipour 2003.)

Digitalisation is facilitating the convergence of the design, engineering, and construction processes of housing. The traditional building production process, still prevalent in the housing industry, proceeds from conceptual design to form generation, selection of materials, and conventional constructive system. In emerging component-based design and manufacturing process, site, building, systems, subsystems, assemblies, subassemblies, components and parts form a nested modular hierarchy with compatible interfaces, where design and manufacturing tasks can be distributed to a network of producers and take place simultaneously. (Lyon 2011.) Building information modelling used in the construction industry not only increases efficiency, saves time, enhances logistics, and reduces errors at the building site, but more importantly, transforms the emerging building into a three-dimensional digital representation that can integrate information provided by multiple parties and be modified by many actors in a seamless process. Architects and engineers can utilise extensive virtual libraries of building parts and other components. When connected to production management, digital product modelling ideally increases flexibility and variability of production. It enables virtual testing and modification of buildings and dwellings, and visualisation of the unfinished products to customers. (Vainio 2008, 10.) On the other hand, it may narrow the possibilities of architectural diversification and nurture repetition (Krokfors 2010).

Along with technological change, industrial production is experiencing a shift from mass production to flexible production that allows variability in products and processes and relies on synergy between multiple actors (Castells 1996, 167). Victor and Boynton (1998, see also Virkkunen 2007 and Mäntysalo & Puustinen 2008) identify five types of work in the history of industrial production: craft, mass production, process enhancement, mass customisation, and co-configuration. They state that each successive phase is based on reconfiguration of the capabilities created in the previous one in order to adapt to changing conditions, and that each phase presumes specific knowledge. Mass production has necessitated the articulation of tacit knowledge created in craft work into standardised practices, which in turn has generated practical knowledge that can be used for enhancing the industrial processes. Transition to mass customisation, where products that meet individual customers' needs are delivered with near



mass production efficiency<sup>17</sup>, requires “architectural knowledge” about the whole system and its interconnections (Victor & Boynton 1998, 99).

17 .  
Definition of mass  
customisation by Tseng  
& Jiao 2001, 685.

Mass customisation is based on the modularisation of products and production along the scope of customer needs. The product architecture in mass customisation consists of product platform and interchangeable modules, of which individual configurations are assembled to customer specifications, ideally in an on-demand order-to-delivery process supported by online configurators (Pine 1993). According to Gilmore and Pine (1997) mass customisation can be collaborative, adaptive, cosmetic or transparent. In collaborative customisation, the company helps the customers to articulate their needs, identifies the solutions to meet the needs, and makes the customised products. Adaptive customisation enables users themselves to alter the product to their needs without interaction with the company. In cosmetic customisation a standard product is presented differently to different customers, varying merely the representation of the product for example by packaging. Transparent customisation aims at delivering unique products or services based on deducing the needs of individual customers without their participation. Salvador et al. (2009) identify three fundamental objectives when moving to mass customised production: identification of the product attributes along which customer needs diverge the most (“solution space definition”), reuse or recombination of existing organisational and value-chain resources (“robust process design”), and helping customers to identify or build solutions to their own needs (“choice navigation”).

Co-configuration builds upon mass customisation, but is a more collaborative and continuous form of production. It entails “building and sustaining a fully integrated [production] system that can sense, respond, and adapt to the individual experience of the customer” (Victor & Boynton 1998, 195). In co-configuration, intelligent and adaptive products are continuously improved in long-term interactions within collaborative value creation systems where users are given an active role.

Mass customisation and co-configuration have emerged in response to markets characterised by heterogeneity and fragmentation, demand for product variability and adaptability, faster product development processes, and shorter product life-cycles (Pine 1993). Essentially, they aim at solving the contradiction between the demands of increasing scale versus increasing scope of industrial production. Personalisation of products and environments can also be seen as “using technology to accommodate the

differences between individuals” (Bruce Kasanoff as quoted by Piller & Tseng 2009, 7). New production methods challenge the prevalent design culture. As opposed to mass production where emphasis is either on maximal design uniqueness or minimal variable cost, they favour *designs that have synergy with other designs* by way of shared parts and processes (Salvador et al. 2009, 77).

Flexibility on the level of the dwelling can be achieved by developing both the physical structure and the production process of dwellings towards more modularity and openness. Open building is a technical enabler making variation and customisation of mass-produced dwellings feasible. In open building, the static load-bearing structure of the building (“support”) is separated from a changeable layer (“infill”), consisting of the skin of the building, internal walls and built-in furnishings, technical installations and access space (Leupen 2006a, 32). This ideally enables flexibility of space and services within individual dwellings both before and during occupation. An overview of applying open building in residential architecture is given by Kendall and Teicher (2000). Open building has not been widely employed by the Finnish housing industry even if some individual housing projects and commercial housing concepts exhibit certain characteristics of it.<sup>18</sup> Tiuri and Hedman (1998), Tarpio and Tiuri (2001), and Kahri et al. (2011) have discussed the topic in Finland. Karin Krokfors (2006 and 2008) has put forth an interesting alternative approach in her study on flexible dwelling types based on dividability and combinability of dwellings. Jyrki Tarpio in his forthcoming dissertation (due in 2014) investigates spatial strategies for achieving flexibility in dwelling.

Constant changeability of the dwelling and specificity of it in relation to the actions of individual users that characterise many “high-tech” approaches to housing can be contrasted by the notion of *polyvalence* introduced by structuralist architectural theorists in the 1960s (Hertzberger 2005; Leupen 2006a and 2006b). It refers to a form that can be used for many purposes without changing itself. A polyvalent space invites “all” uses due to its generality or incompleteness, as opposed to functionally segregated modern dwellings that are designed to tolerate one function exclusively. In Finland, Krokfors (2008, 2010) has used the term “neutral space” in a somewhat similar meaning.

Some level of mass customisation is common in prefabricated detached house industry, where the buyers usually have the opportunity to customise some parts of their house. Concerning dwellings in blocks of flats, most large developers offer their customers pre-designed options that are based on

18 .

Of the few examples of residential open building can be mentioned two apartment houses in Helsinki that offered the residents extensive customisation options of the floor plan: a rental housing project by vvo in Laivalahdenkaari 18 (1995) and the pilot project of the PlusHome concept by Sato in Kaj Franckin katu 1 (2005), both designed by architect Esko Kahri and resulting from building technology competitions.

mass customisation. In construction engineering, development of prefabricated standard units such as bathroom modules shows a similar tendency (Interview c1). Mäntysalo and Puustinen (2008) have analysed Finnish housing production in the light of Victor and Boynton's theory. They criticise the current "superficial" mass customisation approaches in the market for inability in meeting the scope of individual demands. They state that developing true alternatives in housing would require deeper and more continuous interaction between users, planners and producers, and reflect on the adoption of co-configuration methods in the development of new housing concepts.

Advanced mass customisation models for housing production aim at opening the design and manufacturing process to communities of producers, designers and users. The model of "open source building" proposed by House—n research group at MIT involves an online dwelling design configurator ("design engine") that allows consumers to design their own interior room layouts through an intelligent search algorithm which matches their personal living styles to a vast array of unique dwelling layouts. The system enables non-expert users to elicit their preferences into an architectural programme within constraints set by architects and engineers, searches for matching subassemblies of the dwelling offered by producers and designers globally, generates alternative layouts that the users can further iterate and receive expert feedback on, and allows local builders to bid on the assembly of the flat. This would require not only disentangling buildings into layers of integrated assemblies, but agreement on standard interfaces to ensure compatibility of the components. It would also profoundly transform the building and construction business as well as the role of designers. (Larson et al. 2004.)

Perceiving the dwelling as a platform (product platform and platform for living) calls for redefinition of the value network in housing as well. The new production philosophy suggests seeing the dwelling as a continuously evolving composite offering (rather than finished artefact) where various new producers and service providers will need to plug into during its entire lifecycle. This directs producers' interest to the use phase of housing and proposes thinking of the customership of housing in a longer time perspective. Indeed, the roadmap for Finland's building industry until 2050 states that the field should reorientate itself from construction business to service business and from house-building to user-centred, collaborative *change management* driven by objectives such as wellbeing and regeneration of the existing built environment (Airaksinen et al. 2011, 68).

## Housing concepts and the commodification of housing in Finland

### 4 . 2 . 1

#### SHAPING OF THE INDUSTRIAL URBAN DWELLING INTO PRODUCT

Examination of the history of urban housing reveals a gradual shaping of the individual dwelling into a distinct, designable and differentiable product. Modernisation has also meant the commodification of dwelling. Present housing concepts and brands are one phase in a development that can be paralleled to that of other industrial products in late-modern society. The evolution of the dwelling product has been driven by social and technological change and is connected to major transitions in the housing regime. It is manifested as gradual transformation of the “inner state” of the dwelling product and as changes to its “dominant design”.

A comprehensive overview of the history of the Finnish housing provision system and housing policy is provided by Anneli Juntto (1990). Kirsi Saarikangas (2002) has studied the formation of the modern standard dwelling in Finland, and Johanna Hankonen (1994) the post-war suburbanisation period and concurrent industrialisation of housing. The development of urban housing in Finland can be divided into three distinctive periods (see Table 1). They are characterised by differences considering perception of the user, dwelling design, dominant discourses in housing, technology and building methods, focus in urban planning and development, structure of the housing industry, position of architects within the housing system, and housing policy. The division of the periods is my interpretation based mainly on Jallinoja (1997), Juntto (1990) and Neuvonen (2006). The periods should be seen as a generalisation of many parallel and overlapping developments, features of which continue to influence the housing of today. As Juntto (1990, 364) has pointed out, the transition between recognisable periods of housing is not sudden but happens as continuous gradual transformation beginning from the formation of new ideologies. Geels (2002) would call this the breaking through of niche activities to regime level. The prototype of the modern standard dwelling, for instance, was created by avant-garde architects over two decades before it reached the mainstream housing production in Finland by the 1950s (Saarikangas 2002).

Urbanisation in Finland has begun later than in many other European countries. The urban block of flats as a housing type began to spread in the 1880s, when traditional one or two-storey wooden houses in larger cities increasingly were replaced by densely built multi-storey houses with brick construction, based on Central European models of the bourgeois apartment house and the *Mietskaserne*. Around the same time, there was a paradigm shift in urban design whereby the society and city begun to be perceived as objects that could be planned with foresight (Juntto 1990, 100). The early period of urban housing (circa 1880–1940) before the breakthrough of modernism was characterised by social differentiation, emphasis on housing as means of social reform, concerns about hygiene and health, and alternation of distinctive architectural styles. Housing needs were perceived as predetermined by class and dwelling types for various strata of the society such as the bourgeoisie and the workers were developed separately. This period witnessed some major technological innovations like electricity, water piping and drainage, water closet and bathroom, central heating, and reinforced concrete, that improved the technical quality of buildings and the comfort of living in cities. The basic components of the present day urban dwelling were largely set. The bourgeois apartment was based on clear division to public reception rooms, private family rooms, and a hidden service section (see Saarikangas 2002). International aesthetic movements such as Art Nouveau and its Finnish version, national romanticism, raised the interestingness of dwelling design among architects. This led to highly refined examples of the upper class dwelling as complete artwork but also improved the quality of other dwelling design. From the 1920s onwards, classicist and early functionalist housing architecture paved way for the modern dwelling.

The formation of the modern dwelling according to Saarikangas happened in Finland between about 1930 and 1950. This meant a major shift in the housing regime towards democratisation and industrialisation. The dwelling space experienced rapid standardisation and functional differentiation. The modern dwelling was designed for abstract, universal model inhabitants who perform measurable functions. As described by Saarikangas (2002, 559):

*Modern dwellings, considered classless and equal, were inhabited by universalised faceless nuclear families, consisting of mother, father and children. Mothers and small children in particular were made into the nucleus of housing planning and discussion. The privatized nuclear family was constructed as the basis of habitation.*

The modern dwelling accentuated the privacy of the nuclear family and separation of work and habitation. It consisted of kitchen, bathroom, living room, and separate bedrooms for each member of the family. Development of the modern functional kitchen was one of the main technological advancements in this period. Dwellings increasingly had an open plan where the kitchen was opened to dining space and living room. Standardisation reduced random variation into basic types for different purposes that had undergone need analysis (Juntto 1990, 182). New dwelling types were based on family size, income level and age segment. Dwellings begun to be produced for anonymous market rather than for own use or for known clients. The functionally differentiated modern standard dwelling was enforced by norms and regulations and replicated with the help of type-planned and avant-garde housing designs by leading architects. Characteristic to the modern design paradigm was continuity in scale from “city to door handle”. The material environment as a whole was seen as an object that should be designed to meet societal objectives such as healthiness, cleanliness, rationality and efficiency.

Housing design concentrated on the ordinary, the practical and the everyday. Saving of time and optimisation of space in dwellings became the concern of architects and designers. Their consideration of the smallest details in the domestic environment at best produced beautiful examples of humane, well-designed economic dwellings for the masses. At the same time, consumer culture reached ordinary homes in the form of cheap mass-produced furniture and other objects. Modernity completely infiltrated the everyday experience via town planning, housing architecture, and product design (Saarikangas 2002, 569).

Standardisation of the elements and subsystems of the dwelling product gradually pushed the industrialisation of building. This reached a culmination during the massive suburbanisation period (circa 1960–1975), when a large number of satellite areas were built in the outskirts of cities to house people moving away from rural areas and from poor dwelling conditions in cities. Hankonen (1994) has exhaustively researched this period. She describes how efficiency, planning and progress became the driving forces in design and production of housing and how the built environment was transformed by a technostucturalised production system to support a modern, consumption-oriented way of living. Large-scale industrialisation of housing was enabled by prefabricated concrete elements and mechanisation of the building process that allowed serial on-site assembly.

Standardisation on all levels of the built environment was promoted by the industry as well as authorities and designers with growing interest in modularity and “total designs” integrating dwelling with the urban structure. Adoption of the minimum standard as a fixed norm led to homogenisation of the offering. Custom design and crafted details disappeared as the dwelling product was streamlined by producers and financiers. The same dwelling designs were repeated in multiple locations, as was the whole prototype of the suburb. Large areas were realised under agreement between banks, builders and local politicians. The production was divided into three main categories directed at different social segments that still form the basis of the offering: state-subsidised rental housing, price-controlled owner-occupied housing of medium standard, and free-market housing with more individual dwellings for those who could afford them (ibid., 459).

Hankonen attests that architects during the industrialisation period became subordinate members in a system dominated by engineers and economists that aimed to satisfy a market demand that was thought to be essentially infinite. Design activity was centralised and anonymised. The ideal was that fewer designers would design for ever more consumers. Within the housing system, research, product development and marketing emerged as new type of professional activities (ibid., 469). One facet of these developments according to Hankonen was new kind of marketisation of housing. The nature of dwelling as a mass commodity and object of consumption became established. Suburbs as well as individual flats were defined as products that could be marketed to individual consumers. This imposed on people the normality of consumption (a “housing career”) and the idea of continuous unfulfilment of housing needs and desires (ibid., 181):

*The planning system connected the standard dwelling produced in long series in the industrially built suburbs with the mass market of durable consumer goods. At the same time, exceeding this standard in continuous social comparison [...] became to sustain the demand for new production and justify the extension of the range of ostensibly differentiated branded products.*

After the peak production volumes in mid-seventies and waning of the suburbanisation project, housing production in Finland has been characterised by a tendency towards more individualism and diversity, as is the general trend in late-modern societies. Welfare state relying on



Technological innovations (4, 5, 7)	Electricity, water piping, drainage, water closet and bathroom, central heating, reinforced concrete	Modern kitchen, standardised building parts, prefabricated concrete elements, mechanisation of the building process	Home automation, digitalisation of design and manufacturing, building information modelling, mass customisation
Building methods (5)	Craft-intensive on-site brick and wood construction, later cast concrete	Concrete element construction based on prefabrication and serial assembly	Variable industrial construction systems, increase of technical installations
Focus of urban development (4, 5, 7)	Building the town centres, new inner-city districts and small suburban communities	Post-war reconstruction, building of the satellite suburbs	Densification of the urban structure, brownfield development, mixed use
Characteristics of the housing industry (1, 3, 7)	Private founder-contractors and investors building singular blocks of flats within the existing urban structure	Local commercial or non-profit construction companies partnered with banks, building whole areas at a time	Concentration of the industry; nationally or globally operating residential developers executing mid-scale projects
Position of architects in the housing system (1, 4)	Architects replace master builders in overall charge as interest towards urban housing as object of design grows	After a leading role until the 1960s, architects become subordinate members of an engineer-dominated technostucture	Architects work as consultants in projects; emergence of residential development and marketing as new roles
Phases of housing policy (3)	From the era of philanthropy to the birth of the public institutions of housing; building plots as means of policy	Rise of the welfare state relying on the ideals of linear growth and central planning; state loans as means of policy	From welfare state to privatisation, market-orientedness and deregulation; consumption subsidies as means of policy

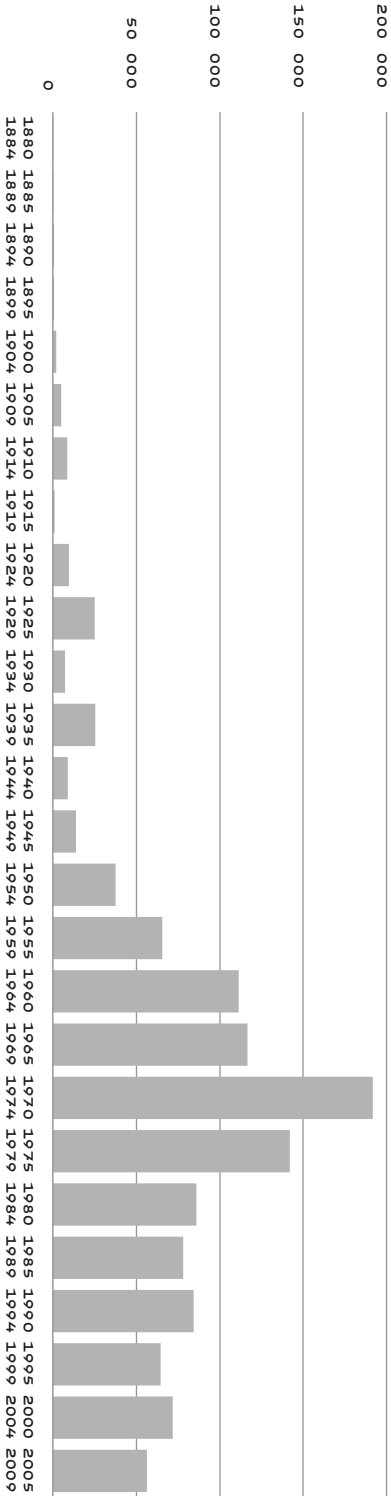
TABLE 1.

An overview of the three distinctive periods of industrial urban housing in Finland. Sources: (1) Hankonen 1994, (2) Jallinoja 1997, (3) Junto 1990, (4) Kahri & Pykönen 1984, (5) Neuvonen 2006, (6) Saarikangas 2002, and (7) Vainio 2008. The diagram above the table shows the number of dwellings in blocks of flats in 2010 according to the five-year period when they were completed (Statistics Finland 2010). [1] Of the roughly 2.6 million permanently occupied dwellings in Finland in 2013, about 45 per cent were situated in blocks of flats, while detached houses and attached houses had respective shares of 41 and 14 per cent of the dwelling stock. 45 per cent were one or two-room dwellings. One-third of the population (nearly 1.8 million Finns) live in blocks of flats. 90 per cent of the dwellings now in use in Finland have been built after 1945.[2]

[1] Figures below 1,000 are not shown. The figures especially in the early period are not totally accurate. The volume of new production has been larger, as part of older dwellings in blocks of flats have been demolished or have changed their function. Nevertheless, the chart describes the overall trend of production relatively reliably (cf. Neuvonen 2006, 10–11). Comprehensive statistics of new dwelling production in Finland exist only from the year 1957 onwards.

[2] Statistics Finland. Dwellings and housing conditions. Various statistics retrieved from the StatFin database: [http://193.166.171.75/database/StatFin/asu/asas/asas\\_en.asp](http://193.166.171.75/database/StatFin/asu/asas/asas_en.asp)





	SOCIAL DIFFERENTIATION	STANDARDISATION	INDIVIDUALISM
Perception of the user (2, 3)	Traditional: member of a social class with predetermined needs	Normative: anonymous model inhabitant (nuclear family) who performs functions	Individualistic: autonomous consumer with subjective demands and preferences
Development of the dwelling (3, 4, 6)	Parallel refinement of socially and spatially segregated dwelling types such as the bourgeois apartment and workers' housing	Establishment of the middle-class standard dwelling consisting of kitchen, living room and bedroom(s) as a norm	Partial questioning of the norm dwelling due to lifestyle changes, tendency for typological and contextual diversification
Discourses in housing (1, 3, 4, 7)	Social reform, education, housing for the underprivileged, healthiness and hygiene, stylistic and typological renewal	Type-planned dwellings, standardisation, rationalisation, industrialisation, efficiency, integrated systems, planning	Quality, diversity, flexibility, sustainability, regeneration, lifestyles, preferences, participatory design, partnerships

planning has given way to privatisation, market-orientation and deregulation. When the technical standard of living has been achieved by the majority, part of consumers have moved to lifestyle-based dwelling where choices are driven by desire for self-expression and fulfilment of individual needs. (Juntto 1990.) Discourses in housing have turned to topics such as quality, diversity, flexibility, sustainability, regeneration, lifestyles, preferences and participatory design. Aesthetic and typological variety are seen as important goals of design by professionals. A transition to “systematised tailoring” (mass customisation) in housing production was anticipated by Finnish architects already in the 1980’s (Kahri & Pyykönen 1984, 157). In the late-modern housing paradigm, residents are seen as autonomous consumers with subjective demands and preferences. This has led to partial questioning of the standard dwelling due to lifestyle changes. Yet, regular dwelling design has continued to be largely determined by norms and standards. The present social and technological trends were discussed earlier.

To sum up, the evolution of industrial urban dwelling as a product is characterised by two major shifts. At first, norms have taken over tradition in the “genome” of housing. After that, market-driven individualism has come to define the goals of design and production. In reflection to Eger and Drukker’s (2010) model of qualitative product phases, the dwelling product would seem to have experienced the phases of performance (early technical and typological development of the urban block of flats), optimisation (establishment of a dominant design of the modern standard dwelling by the 1950’s), itemisation (marketisation of housing from the 1960s on), segmentation (demographic and lifestyle-based differentiation) and individualisation (aesthetic diversification since the 1980s, recent mass customisation efforts). Current focus on sustainability of housing suggests that part of it may be moving to the awareness phase. All of the phases, however, are present in the Finnish dwelling stock.

As noted, the suitability of Eger and Drukker’s model as such to housing may pose some problems (see Chapter 3.4.2). Truly assessing the parallels between dwelling and other industrial products would require further research. That notwithstanding, housing concepts seen in the context of the evolution of housing seem a logical phase in the commodification process instigated by modernity.

The word “concept” in the meaning of “business idea or product idea (of a company)” first appeared in Finnish business language in the late 1970s. It did not gain notable popularity until the early 1990s (Piehl 1993; see also Chapter 3.3). First sporadic occurrences of the term “housing concept” (*asumiskonsepti* or *asuntokonsepti*<sup>19</sup>) can be found in the media around the same time, in early 1990s. The term became more widespread in the end of 1990s and in the beginning of 2000s, when many new housing concepts were introduced to the market. This suggests that the notion of concept has infiltrated housing from other fields of business. Indeed, first so named housing concepts according to my informant with long career in the industry were new financing models and tenure forms of housing:

*First concepts came in the 1990s. We introduced a new way for financing housing to the market, part-ownership dwellings, and somehow wanted to brand them. As I see it, right-of-occupancy dwellings and part-ownership dwellings were the first concepts. When this kind of new housing models were implemented [they were called concepts].<sup>20</sup> (C3)*

Both innovations had required political decisions and legislation. New opportunities opened by regulators were thus picked up and commoditised by producers. Part-ownership dwellings were offered to private consumers by builders partnered with banks. The key differentiating element of the dwelling product now was something outside of the built artefact (the financing model). One can argue that expansion of the dwelling product beyond mere building necessitated the adoption of a term that could better accommodate its composite aspect and new nature as a differentiated product in the market. To market the novelty simply as financing model would have been inapt because to both consumers and providers the financing model and specific dwellings were a “package”.

From financing, the commoditisation of dwelling through concepts moved on to its material elements. First concepts to address housing design were senior housing concepts (e.g. Aktiivikoti, 2000) and the BoKlok concept, developed in Sweden in 1997 and introduced to Finland in 2002 (see Chapter 4.3.1). An intensive period of commoditisation and branding followed. In 2008, there were at least 28 named concepts in the market (Väliniemi et al. 2008). Since then, the industry’s enthusiasm to develop new concepts seems to have slightly faded, perhaps due to economic uncertainty. It needs

19.

The former, literally “living/dwelling concept”, is by definition broader and more ambiguous than the latter, “apartment/housing concept”. I will use the English term “housing concept” regardless of variation in Finnish sources.

20.

In *right-of-occupancy housing*, the residents pay a right-of-occupancy fee amounting to 15 per cent of the purchase price as well as a monthly occupancy fee. They are not entitled to purchase the dwelling. First dwellings were built in 1991. Residents of *part-ownership housing* purchase a share of their dwelling and obtain right of residency for a fixed period as tenants. After 5–12 years they may buy the whole dwelling. The financing model was introduced in 1993. (Finnish Ministry of the Environment, [www.ymparisto.fi](http://www.ymparisto.fi).)

to be added that some earlier novelties in housing can be considered concepts as well, even if the specific word was not in use at the time. An example are the central kitchen flats of the 1930s, a short-lived innovation brought about by the increase of single-person middle-class households in the cities. The type-planned post-war wooden single-family houses (so called frontmen's houses) have also been considered a housing concept in recent discourse.

Several factors have influenced the emergence of housing concepts in Finland. First of all, they are connected to the general trend in late-modern society towards individualisation and commodification that was discussed earlier. Positioning housing concepts in the continuum of housing production in Finland, they are one example of the development of housing towards more individualism that has begun in the 1970s after the peak standardisation period (see Table 1). At first, in the 1980s, emphasis was on restoration of the *genius loci* lost along industrialisation through architectural diversity and regionalism. As the field became more and more market-oriented, focus shifted to duplicable, differentiated, branded housing solutions targeted to specific customer segments. The development of housing concepts can be seen as the industry's attempt to manage diversifying customer demand, growing technical complexity, large production volumes and increasing competition. It also implies that housing as product had reached a level of maturity that necessitated its more refined positioning and differentiation in relation to customers (cf. Eger & Drukker 2010).

One key factor facilitating the commodification of housing must have been the structural change of the Finnish housing industry that begun in the 1980s (Juntto 1990) and was accelerated by the 1990s recession, when many small and medium-sized locally operating construction companies were forced to declare bankruptcy and were replaced by larger and more competitive multi-national corporations. This led to the concentration of the construction industry. Currently it is estimated that ten largest companies control 45 per cent of the market. Of the companies that are represented in this study, Skanska (founded in Sweden in 1887 as Skånska Cementgjuteriet) entered Finland in 1994. ncc (Nordic Construction Company, also from Sweden) began its housing production in Finland in 1998 after acquisition of the Finnish Puolimatka construction company. Sato (originally Sosiaalinen Asuntotuotanto, literally "Social Housing Production"), founded in 1940 as a non-profit housing contractor, was incorporated in the 1990's. Companies producing large amounts of dwellings possibly in several countries profit from developing

standardised and partially modular solutions. On the other hand, their market is large and de-regionalised enough to allow differentiation of products.

A further shift that has favoured the emergence of duplicable housing concepts has been the division in corporations of property development and building construction into separate business areas in the 2000s. This has meant the distinguishing of residential development as special professional activity that concentrates on value creation and more strategic design and business issues beyond singular building projects. This has also meant increasing centralisation of design decisions (Sohlenius 2006). In NCC, for example, the division happened in 2003 for other types of construction and in 2009 for housing.

#### 4.2.3

#### PREVIOUS RESEARCH AND DEFINITIONS

Housing concepts have become subject of interest within the Finnish housing research community during the last decade, most notable example being a research project called the Future Concepts of Urban Housing (2007–2010, see [www.urba.fi/english](http://www.urba.fi/english)). The project aimed at identifying new types of housing alternatives suitable to the Helsinki region. Several potentially attractive concepts were identified on the basis of international benchmarking and developed further towards locally feasible adaptations in a co-design process involving users and public and private actors. Despite the rather practical emphasis of the project, the publications of it (Norvasuo 2008 and 2010) provide valuable insights about the nature of housing concepts even on a more theoretical level.

Two research reports from the fields of consumer studies and building economics map the offering of housing concepts in Finland. Väliniemi et al. (2008) have compared the explicit contentual aims of commercial housing concepts to those of publicly subsidised pilot projects of housing. They show that the previous stress individuality and personalisation (albeit on a rather superficial manner), while more “serious” societal aims such as sustainability are emphasised in the latter. Aaltonen et al. (2011) approach housing concepts from the perspective of service business. After analysing current housing service concepts (their term) in Finland and pointing out the immaturity of the field particularly in comparison to the United States, they propose a model for service concept development in the housing sector. These reports offer a comprehensive overview of the offering in Finland at the time,

even if both rely in their analysis mostly on descriptions of concepts provided by companies in their websites for marketing purposes. The reports also have theoretical shortcomings. For instance, seeing housing concepts as directly analogous to service concepts, like Aaltonen et al. suggest, all but denies the materiality that is so essential to them according to the prepositions of the study at hand.

A simple way to define housing concept would be as novel housing solution made up of variables like building type, spatial design, tenure form and service model (Norvasuo 2008). Väliniemi et al. (2008, *italics mine*) define commercial housing concepts as “specifically *named products* (e.g. dwellings or housing areas) that distinguish themselves from the mainstream by *contentual aims and ideas*”. This definition emphasises concepts as means of differentiation in the market and is close to the general usage of concept in industry. Norvasuo (2008) also gives a more open-ended and design-oriented definition, outlining three meanings for housing concept: as description of a new housing solution, as metaphor or goal of problem solving in design and development, and as new practice in the field. Mäntysalo and Puustinen (2008) have suggested seeing housing concepts as ambiguous “boundary objects” that have the capacity to foster creativity, create commitment and facilitate collaboration across systemic boundaries (see Chapter 3.3).

At this point, I will bring in my own preliminary definition. Housing concept can be defined as a specification of key features of a novel housing solution. A housing concept is duplicable: multiple housing projects with variable design can be realised according to it. It typically contains some feature or element that is beyond the physical building. A housing concept defines a whole and its constituent parts to deliver a clearly articulated benefit or set of meanings to a user. It serves differentiation and positioning of housing production in the market as well as standardisation and systematisation of product variation. Concept is connected to the product development, design and marketing phases of housing production, preceding individual building projects and use. Housing concepts reflect the expansion of dwelling as an industrial product beyond architecture. The fact that they can be composites of tangible and intangible properties makes them especially interesting as an object of study from the perspective of expanding design activity. Housing concepts exhibit elements and characteristics that fall outside the traditional definition of housing as product and the hierarchical housing design system. The concepts mediate between the requirements of industrial production and individual residents.

Before continuing, we must clarify the relationship of housing concept to two related notions, housing *type* and housing *brand*. Typology in architecture can be seen as idealisation based on abstraction and classification of large amount of historical precedents. A building type or dwelling type represents an "average", recognisable combination of basic architectural features. It is socially constructed rather than designed. As defined by Habraken (2000, 278–284), type in the built environment derives from combination of specific, familiar units of space and form in a socially determined fashion. Type is created collectively by continuity and repetition over time, and is shaped and clarified by variation. Brand on the other hand is "a name, term, symbol or design, or combination of these that identifies the goods or services of one seller or group of sellers and differentiates them from those of competitors" (Kotler et al. 2008, 511). Brand aims to evoke a "set of associations (with lifestyles, contexts), communicating values, linking to values" (Klingmann 2007, 306). In the built environment, branding is used on many levels. It is often difficult to distinguish between a housing concept and brand from how the terms are used. Housing concept seems to be a primarily Nordic and Dutch term whereas housing brand is preferred in many other countries in reference to similar solutions. Concept by definition emphasises more the product structure and production process, i.e. aspects that may not necessarily have to be visible to the end user, whereas brand focuses on the product image. In a continuum from tangible to intangible dimension, housing concepts can be positioned in-between housing type and housing brand. Type can be one differentiating factor in a concept and concepts are typically branded to signal their benefits to the public. Different brands can also be based on the same underlying concept.

#### 4.2.4

#### STUDYING THE CONCEPTS

I have selected five housing concepts that have been realised in Finland during the last decade for closer analysis on the basis of their ability for illustrating different aspects of the "productness" of dwelling. Rather than exercising value judgment for identifying the "best" concepts among the offering, the intention has been to detect the cases that are the most "revealing" in the light of the research question. Because my interest lies in the compositeness and mediativeness of housing concepts, focus has been on concepts that impact the material consistency of dwelling. Intangible concepts such as branded financing models and pure service concepts were therefore



ruled out. Apart from my personal knowledge of the field and first theoretical hypotheses about dwelling as product, the choice has been informed by availability of source material about each concept.

The selected concepts are *Aktiivikoti* ("Active Home"), a housing concept for the elderly that emphasises accessibility; *BoKlok* (LiveSmart), aiming to offer an attractive dwelling solution at an affordable price; *PlusKoti* (PlusHome) with extensive customisation options and background in open building; *Neo-Loft*, an interpretation of the loft dwelling allowing for self-building of the interior space; and *Loppukiri* ("Sprint"), a communal senior house initiated by the residents. The first three concepts have been commercialised to the extent that they are being duplicated to several locations, whereas the last two concepts have so far only been realised as one-off pilot projects, even if the basic concept in both cases is duplicable. Information about the concepts has been gathered from various sources: research literature, articles in professional and popular media, websites and other advertising and marketing material produced by the companies, as well as direct observation of the physical artefacts in their environment.

During the course of the initial analysis of the housing concepts it became evident that the sources did not provide sufficient information about the intentions and prerequisites behind the concepts from the developers' side. In order to get an overview of the present state of the industry concerning the research question, it was deemed necessary to interview a few persons responsible of residential product development in construction companies. The candidates were identified on the basis of three criteria. Firstly, the companies that had realised the case concepts were targeted. Secondly, the persons who were approached should be involved in strategic and conceptual level product development beyond individual building projects. Thirdly, roles with customer orientation were preferred. Four candidates were contacted by email and telephone. Three of them agreed to participate.

The persons who were interviewed are a product development manager in Skanska Homes Finland, part of Skanska Group, one of the ten largest construction companies globally; a development manager in ncc Housing Finland that belongs to ncc Group, the second largest construction company in the Nordic region; and a marketing and communications director in Sato Corporation, a Finnish housing investment and development company owning about 23.000 rental dwellings and also commissioning owner-occupied housing. Of the nearly 17.000 new dwellings in blocks of flats that were started in Finland in 2010<sup>21</sup>, Skanska begun 1.556 (9%), ncc

21. Statistics Finland, Building and dwelling production 1990–2013 by Construction stage, Year, Quarter, Building type and Data. *Building starts*, 2010. Retrieved from the StatFin database: [http://pxweb2.stat.fi/database/StatFin/rak/ras/ras\\_en.asp](http://pxweb2.stat.fi/database/StatFin/rak/ras/ras_en.asp)



1.858 (11%), of which 1.126 were developer-contracted and 732 built for investor partners, and Sato 565 (3%), of which 190 were owner-occupied and 375 rental dwellings. (Skanska Annual Report 2010, 40; ncc Finland 2010, 2; Sato Annual Report 2010, 16.) Skanska offers the BoKlok concept, ncc the Aktiivikoti concept, and Sato the PlusKoti concept. The Neo-loft pilot was developed by Sato. The Loppukiri house was developed by Sato and built by ncc.

Apart from eliciting background information about specific housing concepts, the interviews concentrated on three main themes: the company representatives' perception of their customers and customership, their view on dwelling as a product and on the differentiation of it, and an overview of the present development process with emphasis on the role of strategic and conceptual design. The interviews were conducted by the author in the premises of the companies. Their duration was between 1 and 1.5 hours. The interviews were recorded and transcribed. In the text, they are referred to as interviews c1, c2 and c3 (see the list of references for more information). The identity of individual respondents is not shown in Chapter 4.4 where the main outcomes of the interviews are discussed. This is to protect the respondents and to avoid emphasis on the activities of individual companies. The companies are referred to as Company X, Y, and Z. The situation is described as it was during summer 2011.

#### 4.3

## Housing concepts as composite mediative products

### 4.3.1

#### THE CASE CONCEPTS: AKTIIVIKOTI, BOKLOK, PLUSKOTI, NEO-LOFT AND LOPPUKIRI

##### AKTIIVIKOTI

Aktiivikoti ("Active Home") is an apartment concept for seniors offered by ncc Housing Finland. It is primarily marketed to couples and singles from the age of fifty onwards. A special target group are ageing people who currently live in dwellings that are too cumbersome or do not meet the modern standards. As put by the marketers, "[a]n Aktiivikoti home offers the carefree life that people previously living in a building with no lift or a house that is too large and where there is too much



FIGURE 15.

Advertisement for Aktiivikoti flats, highlighting the special features. NCC Housing Finland. Clockwise from upper left: No unnecessary doorsteps. Low step to the sauna bench. Controller of the sauna stove situated high up. Installation help when moving in. Door telephone. Secure locking. Automated lighting in the staircase. Good sound insulation. Accessible, comfortable yard. Safety stove. Socket situated higher on the wall. Surface materials according to own choice. Mains powered fire alarm. Glazed balcony. Internet access.

yard work have longed for". The producer describes Aktiivikoti flats as "comfortable, safe and stylish freehold flats for senior citizens". (NCC Finland 2012.) The concept seeks to enable long-time independent living in a "normal" dwelling in spite of impaired mobility and other changes brought by old age.

Aktiivikoti houses are conventional owner-occupied blocks of flats with added technical features that enhance the accessibility and safety of the house and dwelling. The features specifically mentioned in Aktiivikoti marketing material include modern appliances, fire alarms, easy-to-use secure locks and intercoms, spatial design suitable for people with impaired mobility, sound insulation according to latest standards, lifts with automatic doors, and outdoor areas that are easy and safe to move around (see Figure 15). It is possible to add safety and support devices such as support rails to bathrooms later on. The houses are located within short distance from shops, wellbeing services and recreational services, and within the reach of public transportation. There are no services or care staff in the houses. The residents are provided information about home service providers in the area. (NCC Finland 2012.)

The concept was launched in 2000 with the name *Seniorikoti* ("Senior Home"). In 2002, based on experiences from the finished pilot projects, the content and attributes of the concept were defined further and it was renamed as Aktiivikoti. (NCC Finland Annual Reports 2000, 12, and 2002, 5.) Aktiivikoti is one of the oldest housing concepts in Finland still in the market. It can be argued that the original concept has been partly outdated by the general advancement of housing production. Some of its features presented as special

are in fact property of most new dwellings. Lately, the concept has been implemented as versions where assistive features are toned down and presented more as readiness to modifications than as standard features. It seems that “visible” assistiveness is not considered very attractive by the buyers of Aktiivikoti flats who at point of purchase may not yet be in need of the special features. Instead, convenient location and access to services are emphasised as main attractions of the concept. (c2, personal communication 1 November 2012.) Recently, the company has partnered up with a senior housing provider and is planning to build some Aktiivikoti houses next to senior houses with care and catering services that will also be made available for the Aktiivikoti residents. (c2)

#### BOKLOK

The BoKlok (LiveSmart) concept is co-developed and co-owned by construction company Skanska and furniture retailer Ikea. Skanska builds the houses, and Ikea has developed the floor plan and suggestions for interior fittings. The dwellings are sold at Ikea. The aim of the BoKlok concept is to provide “space-saving, functional and high quality housing at a price that enables as many people as possible to afford a stylish and comfortable home” (BoKlok 2012a). Its target group are small suburban families with moderate income, such as “nurses, sales clerks, single parents, and young families still at university”. The concept attempts to tap into their supposed demands with a value proposition combining low price, rapid construction process, and functional apartments of “decent quality” in peaceful surroundings. (Gómez Quesada et al. 2007, 32–33.)

The development of the BoKlok concept was based on a detailed analysis of the economic resources of the target group. The initial aim was to achieve an overall cost reduction of approximately 30 per cent compared to customary housing projects (ibid., 67). Concept development was begun in 1995 and the first houses were completed in Sweden in 1997. Since then, over 5,000 BoKlok dwellings have been built mainly in Sweden but also in Denmark, Norway, Finland, Germany and the UK (Skanska 2012).

The standard BoKlok apartment houses are L-shaped two-storey blocks with three apartments on each floor, the upper ones accessed through a gallery. The apartments contain two, three or four rooms plus kitchen, bathroom and balcony or terrace; with respective floor areas of 53, 69 or 81 square metres (see Figure 17). Tightly planned apartments have space-saving features such as an open plan kitchen and living room. Qualitative features include wooden flooring,

relatively large windows, and slightly higher ceilings than is the norm. There are typically four to six houses in the plot that share a common green courtyard. (BoKlok 2012b.)

The BoKlok concept has evolved through at least six product generations. More recent variants include a terraced house and detached house version of the concept. (Skanska 2012.) BoKlok houses are locally adjustable. The floor plan and basic structure of the buildings stay uniform (even if minor variation is possible), but their outer appearance can be modified according to local conditions, building regulations and stylistic preferences. The cladding, for instance, can be either wood or plaster depending on the environment. Two pre-designed style variants are presently offered in the Swedish market: a traditional model reminiscent of vernacular wooden houses, and a modern model reflecting the modernist functionalist style and more suitable to an urban site. Both are available in several colours. (c1, BoKlok 2012c.)

The main prerequisites for the BoKlok concept to be viable as a business model are rapid turnover of capital tied to land and lower construction costs in comparison to mainstream production. These are achieved by extreme streamlining of both the product and the production process. The lower than average price of BoKlok dwellings is made possible by duplicating the standard design in large volumes, relying on serial industrial production. The houses are prefabricated as large elements in Skanska's production plants, transported to the site, and assembled efficiently within just one day (Gómez Quesada et al. 2007, 32). Another key factor is access to inexpensive land that is planned for this type of housing and is readily buildable in a fast schedule, with the local authorities willing to cooperate. Ideally, the process may last only six months from land purchase to the residents moving in. BoKlok houses are erected on "semi-remote" plots on the outskirts of cities, yet within reach of public transportation. (c1)

In Finland, the BoKlok concept was launched in 2002. Totally five housing projects (174 dwellings) were realised in Helsinki, Tuusula, Espoo, Porvoo and Vantaa between 2003 and 2006. The one in Helsinki contains 54 rental flats. Others are smaller blocks with owner-occupied dwellings (four or six houses with six flats in each). The owner-occupied BoKlok dwellings included a financing model that reduced the need of the buyer's own share of capital to a minimum of 15 per cent. At least two more projects were planned but apparently withdrawn due to lack of reservations. (Skanska Homes Finland 2006. Information about the projects is collected from various electronic sources.)



Shortcomings in meeting the requirements listed above may explain the initial failure of BoKlok in Finland. According to Skanska's representative (c1), some of the sites proved to be ill-chosen regarding the target group. The company also did not have their own production plant in Finland. In addition, the amount of changes demanded to the standard houses by local planning and building authorities eroded the benefits of duplication. Challenges in localisation and modification of a highly specific and standardised concept

FIGURES 16, 17 & 18. The standard floor plan of a BoKlok apartment building and two variants of the exterior as realised in Sweden (above) and Denmark (below). Ikea (<http://www.boklok.com/theconcept/Media-Centre/Download-press-material/>)

became a major barrier for its implementation. This shows the difficulty of importing a housing solution developed in certain context (national housing regime) directly to another. My informant also doubted the viability of offering housing at a significantly lower price than the general price level in an area. Evidently that is not very attractive to a housing developer. It is also unlikely that the resale prices of BoKlok dwellings would be any lower than those of other similar apartments in the area. Despite these considerations, the concept was relaunched in Finland in 2012, when Skanska started building a BoKlok project of 36 flats in Kivistö, Vantaa. This time the houses were designed according to local building regulations from the beginning. A second project, also in Vantaa, is due to be completed in 2014 (see [www.boklok.fi](http://www.boklok.fi)).

BoKlok relies on the idea of a complete, everyman's "one-size-fits-all" housing solution instead of a highly individual or customised dwelling. Even if BoKlok houses do not represent the architectural avant-garde, it is possible to see the concept as continuation of the Scandinavian modern design movement that sought to provide aesthetic and functional industrially produced everyday objects for the masses. On the other hand, the internationally recognised Ikea brand connects the concept directly to global consumer culture where constantly changing, cheap and disposable home furnishings are used for expressing one's individual lifestyle. The association between BoKlok and other Ikea products probably works for the concept by setting the expectations of the customers to an appropriate level, preparing them for the trade-offs of affordability. This might also turn to a disadvantage if the brand is equated with values that are in contradiction with permanence and durability, inherent to dwelling as product.

#### PLUSKOTI

PlusKoti (PlusHome) is a flexible housing concept that offers the residents some individual choices concerning the spatial organisation and interior design of their dwelling. The origins of the concept are in a building technology and site-allocation competition for a plot in Arabianranta, Helsinki, that was launched in 2000 by the City of Helsinki and Tekes, the Finnish Funding Agency for Technology and Innovation. The aim of the competition was to promote innovative user-oriented housing construction based on open building, where the residents could be given decision-making power on the floor plan, fittings and finishing materials of their dwelling as well as alterations to them in the future. A model of the resident service process was required in the competition brief. No specific target group of residents was defined. (Helsinki City Office [2001].)



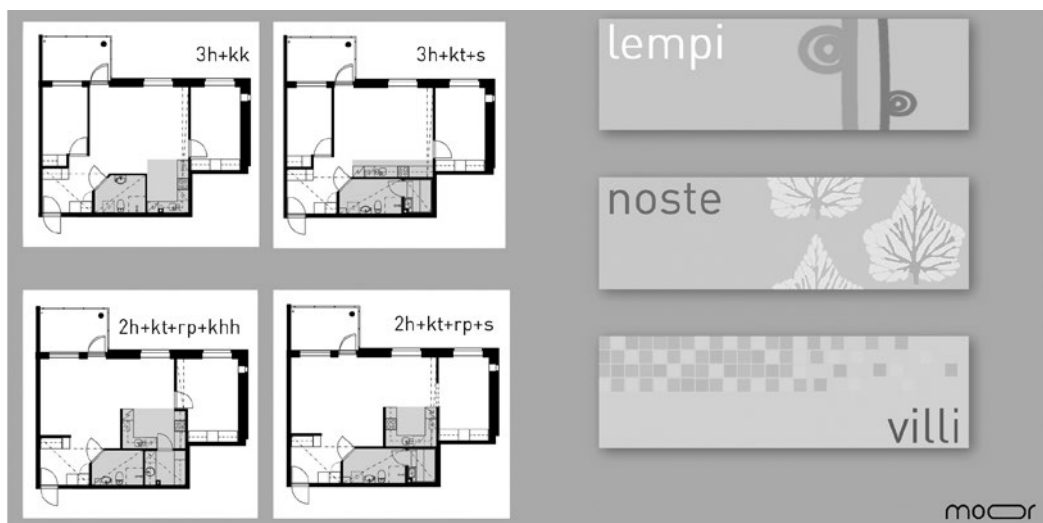


FIGURE 19. Detail from advertisement for PlusKoti flats in Vantaa, Finland, showing four pre-designed floor plan options and the logos of three interior design themes ("Love", "Elevation" and "Wild"). Note how mainly the kitchen and bathroom arrangements vary. Sato Corporation, 2008.

PlusKoti, the winning entry, was developed by Sato, architectural office Kahri & Co, and building information software company Tocoman. The proposal presented a flexible slab-block apartment house where the building frame is separated from the infill layer along the principles of open building, enabling an adaptable spatial structure both in the level of floors and individual dwellings. The customer service model was based on mass customisation. (Ibid., 16–21.) The PlusKoti pilot project in Arabianranta (Kaj Franckin katu 1), comprising 77 individually configured dwellings, was finished in 2005. The buyers were provided an online customisation service where they could select alternative floor plans and interior fit-out options. It was also possible, within certain constraints, to alter the surface area of the dwelling. The service included cost calculation. (Sato Corporation 2005.)

In successive implementations of the PlusKoti concept the scope of customer choice was restricted (сэ), which somewhat diluted its original idea and distanced it from open building. The second version of the concept (see Figure 19) gave the customers professionally designed options on two levels. They could choose among three alternative floor plans where mainly the kitchen and bathroom arrangements vary. The other choice was between three stylistically different interior design themes comprising the interior finishes, materials, and fixed furniture. It was also possible to order additional modifications and features outside the pre-designed collections at a separate price. PlusKoti in its later format is a typical example of current superficial mass customisation approaches in speculative housing production that aim at efficiency in meeting the scope of user needs through systematisation of variation and

packaging of features. Most large housing developers in Finland nowadays provide a similar service. PlusKoti was a pioneer in the utilisation of software to guide the customisation process.

In 2012, all owner-occupied dwellings produced by Sato were marketed under the brand name OmistusKoti ("OwnedHome") and PlusKoti as a particular, named concept had ceased to exist. The basic OmistusKoti product, however, now exhibits the same characteristics as PlusKoti. (Sato Corporation 2012.) This illustrates how an innovative concept or operating model (or some features of it) has become mainstream. The idea of adaptability as such is not enough to differentiate the product from those of the competitors anymore. Nor is online customisation service. Recently, the company has introduced an interesting alternative approach. In some housing projects, qualitative variety is increased by realising very different professionally designed dwellings in the same house prior to any customer contact. The customers are given a choice among complete ready-made dwellings rather than engaged into a virtual customisation process that takes place before construction. (Ibid., c3.)

#### NEO-LOFT

Neo-loft<sup>22</sup> (Uusloft) is a modern interpretation of the loft apartment as applied into new housing production in Finland. Original loft apartments are large adaptable open living spaces with robust details, converted to residential use in former industrial buildings. Neo-loft aims to offer the same benefits of "maximum living space at minimum cost" by means of an open construction system. The concept is based on unfinished apartment shells that the residents themselves can complete according to their own preferences, budgets and timetables. It promotes a do-it-yourself culture in urban housing. (Ilonen et al. 2011, 30.) The Neo-loft concept was developed by architect Pia Ilonen. Apart from the loft tradition, it was influenced by new housing architecture in the Netherlands (ibid., 31).

The path of Neo-loft from the initial idea in 2003 to a finished pilot project in 2010 portrays the difficulty and slowness of getting novel solutions through in the industrial housing production system (see Niska & Laine 2006). Several construction companies originally condemned the idea as unmarketable and contradictory to building regulations. Eventually, the City of Helsinki committed to the concept and allocated a plot for the pilot project in Arabianranta. Sato had already become involved as the developer. When pre-sales began, all flats were immediately booked, which shows that there was a high demand for the concept. The construction was started in 2007. Technical defects found in the frame

22 .

I use capital first letter for reasons of uniformity even if neo-loft is used as a common noun referring to newly built loft apartments.



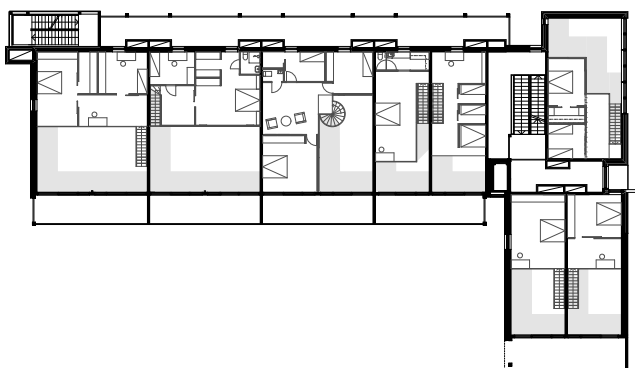
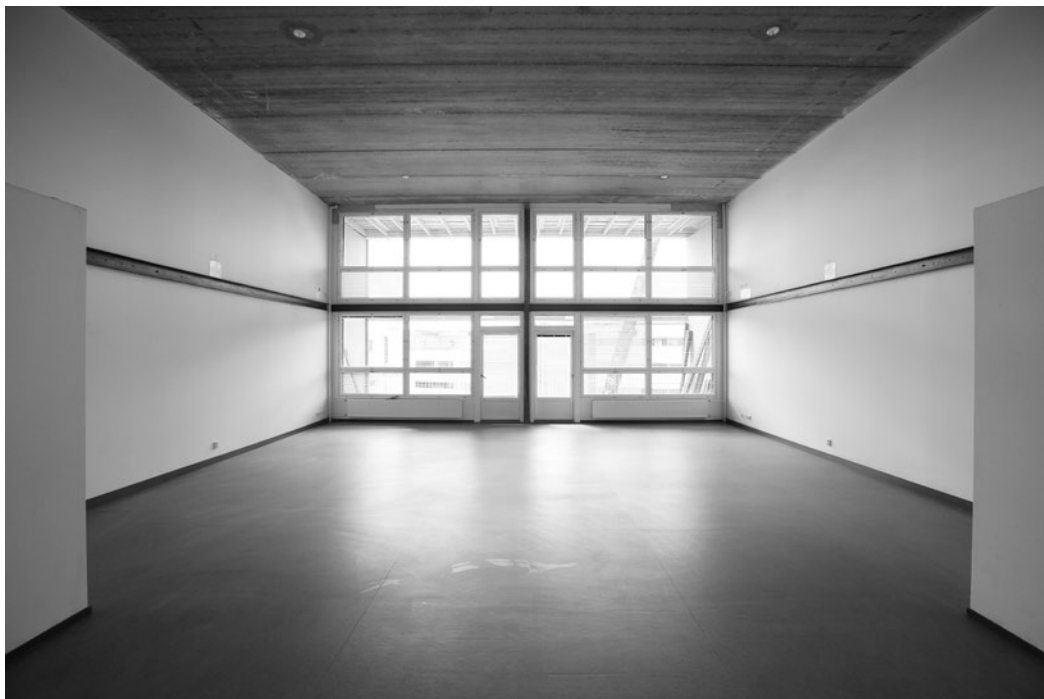


FIGURE 20.  
The interior of a larger  
apartment space (102 m<sup>2</sup>)  
as they were handed over to  
the buyers. Talli Architects.  
Photo: Stefan Bremer.

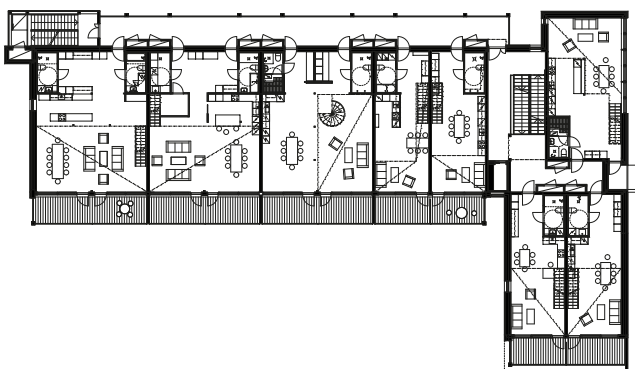


FIGURE 21.  
Plan of the third floor  
and its mezzanine floor  
when completed. Pia  
Ilonen, Talli Architects.

and facade of the already partly occupied building in 2008 postponed its completion until 2010 and caused significant harm for the residents (Nousiainen 2010). Negative public attention drawn to the project at the time and financial loss for the builder contributed to the fact that other planned Neo-loft projects have not been realised, even if the validity of the concept itself is commonly acknowledged in the field (e.g. сэ).

The six-storey Neo-loft house in Arabianranta (Helsingin Tila housing company, Posliinikatu 6) comprises 39 flats accessed through a gallery and seven workspaces in the ground floor connected to the flats above, plus some common facilities. The basic units are of two sizes, 50 and 102 square metres. The spaces are five metres high and have a balcony or, in the top floor flats, a large terrace. They were handed over to buyers as open space with just standard bathroom elements, service connections, and basic flooring material in place (see Figure 20). Steel beams for bearing a mezzanine floor were provided along the walls. Installation of kitchen furniture and other amenities, as well as construction of the mezzanine floor and partition walls were left to the residents.

The residents acted as constructors of their dwellings, using professional help where required. 13 flats were sold as occupiable “raw space” where the buyer took care of the whole process from design acquisition to building permissions and construction. Four households mostly built their dwelling by own hands while the others used professional contractors. 26 flats were sold with the mezzanine floor, stairs and railings in place, their configuration chosen by the buyer among simple alternatives designed by the architect. In this case the role of the user was limited to choosing furnishings and surface materials. The completed flats exhibit a variety of spatial arrangements (see Figure 21). (Personal communication by Pia Ilonen, 6 September 2013; Ilonen et al. 2011; Mukala 2012.)

Many of the occupants in the Neo-loft house are young families with small children (Ilonen et al. 2011, 34). The popularity of the concept illustrates their demand for individual and affordable urban housing. The concept can be seen as an avant-garde urban representation of the traditional ideal of self-built one-family house. In Neo-loft, the opportunity to almost completely design and construct one’s own dwelling has been a crucial attractiveness factor, perhaps even more so than affordability. It is noteworthy that several of the original residents were architects or other design professionals who had high motivation and the required design and craft skills to execute such a project. Information on the final costs of the flats is not available. It would be interesting to compare those of self-built and professionally finished dwellings.

## LOPPUKIRI

Loppukiri ("Sprint") is a pilot project of communal senior housing. It is based on a communal way of living where the residents themselves provide the common services. The project was initiated by a small group of senior persons who were interested in more social living than what the customary senior housing in Finland could offer. In 2000, they founded an association (Aktiiviset Seniorit ry, "Active Seniors") that began to develop the concept of a new type of senior house and recruit like-minded people as future residents. A similar existing community in Stockholm was an important example. The members were to commit to certain basic principles of the community, such as joint responsibility, tolerance, and respect for others. They also needed to be physically able to participate in the common chores. The medium age of residents in 2008 was 67. (Dahlström & Minkkinen 2009. The following text is also based on a discussion with Sirkka Minkkinen, herself a Loppukiri resident, in 1 March 2013.)

The Loppukiri house is situated in Arabianranta, Helsinki (Arabiankatu 19) near the PlusKoti and Neo-loft pilots. It was built on a plot allocated to the association by the city. Sato acted as developer and ncc as general contractor in the project. The house, designed by architect Kirsti Sivén, was completed in 2006. It comprises 58 owner-occupied flats ranging from 36 to 80.5 square metres. There are 11 different dwelling types. The dwellings were individually modified according to the preferences of the future residents in a participatory process led by the architectural office. However, due to cancellations and other changes in the resident base during the process, less than half of the actual residents who moved in obtained a personalised flat (Dahlström & Minkkinen 2009, 132). There are nearly 400 square metres of common spaces in the house. These include a large kitchen, dining room, library-living room, television corner, office, laundry room and storages, as well as an outdoor terrace in the ground floor. Two saunas, fireplace room, exercise room, guest room and a roof terrace are situated on the top seventh floor. The common areas are accessible by wheelchair and have automatic doors.

Loppukiri is operated as a "self service house". The residents are divided into teams that prepare and serve a three-course supper for the whole community in the five weekdays and clean the common spaces. The work shift circulates on an interval of six weeks. As the residents get older, services can in the future also be purchased from outside if needed. At present, the community is becoming aware of the challenges caused by ageing of the residents to the service model. Use of delivery services for transportation of

foodstuff and other means to ease kitchen work are examples of topics that the residents are contemplating at the moment. The community gets together monthly to discuss and make decisions about common issues. A web-based calendar system helps in managing the house, although at the time of writing it was inactive. The residents also organise many social activities together. (Ibid.)

FIGURES 22, 23 & 24.  
The roof terrace (emptied for the winter), common kitchen and common dining room in the Loppukiri house. Photographs by the author, March 2013.



A second house realised according to the concept is going to be built by the association to the new Kalasatama area. Depending on the decisions made by the residents, the building will not be totally identical to Loppukiri. (Aktiiviset Seniorit ry 2012.) The second house, named Kotisatama (“Home Port”) has the same architect but is built by another developer. Loppukiri is an example of a novel housing solution that is developed by a community of enthusiastic laypeople to meet a social need. It can also be seen as transfer of innovation between housing regimes. The operating concept is basically duplicable and can be adapted to different contexts. However, the resident I interviewed strongly emphasised that the core concept of Loppukiri cannot be commercialised because it necessitates a group of committed residents. The concept essentially relies on a shared immaterial agreement rather than any material features of the dwelling product. It has a strong value base. The residents want to further tolerance and respect of others, equality, an active lifestyle, and human dignity in old age (Dahlström & Minkinen 2009, 69–70).

#### 4.3.2

#### THE COMPOSITION OF THE CONCEPTS AND THE STRATEGIES EMPLOYED BY THEM

A comparative overview of the five case concepts is given in Table 2. I shall first analyse how the concepts are constituted as differentiated products in the market and how they operate within the material hierarchy of built environment. The housing concepts resemble other consumer products in that they can be divided into a core product, actual product and augmented product (cf. Kotler et al. 2008). Each concept is built as set of attributes aiming to provide an intangible problem-solving benefit for the resident. The main benefits or promises around which the concepts are built connect to the needs of specific target groups. They seek to tap into valuable needs of consumers that are currently underserved in the housing market. Aktiivikoti aims to provide senior persons an accessible dwelling with assistive technical features that falls into the category of “normal” instead of “special” housing. BoKlok targets families with moderate income with the promise of “decent and comfortable” living in peaceful, village-like surroundings. PlusKoti aims at making personalisation of dwelling easy by offering the first residents a palette of functional and aesthetic choices. Neo-loft seeks to attract the “creative class” by allowing them to design and build themselves a truly individual urban home. Loppukiri relies on

an operational model that enables a more communal lifestyle than mainstream products. The main contentual aims of the concepts thus relate to accessibility (Aktiivikoti), affordability (BoKlok), aesthetic and functional personalisation (PlusKoti), self-design (Neo-loft), and communality (Loppukiri). The basic value proposition in Aktiivikoti, PlusKoti and Loppukiri is “more for the same”, whereas Neo-loft offers “more for less”. BoKlok depending on interpretation offers “the same for less” or “less for much less”, i.e. a simplified product at a significantly lower price (cf. Kotler et al. 2008, 442).

The actual product in the case of housing concepts consists of a bundle of attributes situated on different levels of the built environment. In reflection to Baudrillard (1996), the concepts are collections of “inessential” product features that have been picked up and systematised by producers. Figure 25 shows the main components of the concepts and their physio-spatial distribution. As seen, the concepts operate in the hierarchy of built form by harnessing various designable parts of the dwelling product to their service. The parts are intentionally differentiated in relation to consumers and other products in the market and combined together to deliver a clearly articulated core promise.

In two of the concepts the main differentiating component is outside of built form. In Aktiivikoti it is assistive technical equipment in the apartment level, and in Loppukiri the operational model of the house based on services provided by the residents themselves. PlusKoti and Neo-loft limit to physical form on the apartment level, whereas BoKlok comprises a complete standard housing solution extending from the level of furnishings to characteristics of the site and to a financing model. The concepts thus have different material “depth”. Moreover, they define just some attributes of the dwelling product and leave others to be solved by the design of each particular replication.

Regarding the augmented product, customer service after sales is an integral component especially in those concepts that include some customisation. In PlusKoti, like in most production nowadays, the comparison of design alternatives is supported by a web-based service. The sales event of BoKlok in Ikea is made into a special happening even if the product as such does not allow any customisation. Developers see customer service as one differentiator in the market (see Chapter 4.4).

In addition to specific physical elements, the concepts rely on overall design aesthetics and more abstract mental associations as means of differentiation. In BoKlok, the connection to well-known Ikea brand is a key differentiator

TABLE 2 .  
The five case concepts compared.  
(1) It is possible to order some modifications or select certain interior design features, but these are not central to the promise of the concept.  
(2) Concept development may have begun earlier. The concept was originally called “NCC Seniorikoti”, “NCC Senior Home”.  
(3) The concept was developed in Sweden, where first houses were finished already in 1997, and launched in Finland in 2002.  
(4) Completion of the pilot project was delayed by almost two years due to building defects.



	AKTIIVIKOTI	BOKLOK	PLUSKOTI	NEO-LOFT	LOPPUKIRI
Target group	People in their fifties and sixties, "empty nesters"	Small families with moderate income	People who value aesthetic personalisation	Urban dwellers with high demand for individuality	Seniors interested in communal living
Promise or benefit	"I can live at home as long as possible despite the eventual deterioration of my physical ability"	"I can live decently and comfortably in peaceful surroundings even if I don't earn a lot"	"I can easily get a home that suits my personal functional and aesthetic preferences"	"I can design and make myself a truly different and individual urban home at a moderate cost"	"I do not need to spend my old age in loneliness and passivity"
Strategy for delivering the promise	ADDED FEATURES Assistive technical equipment, physical accessibility or readiness for modifications	SIMPLIFICATION A streamlined complete housing solution at an affordable price	VARIABILITY Elementary mass customisation, pre-designed floor plan and interior-out options	INCOMPLETENESS Unfinished apartment shell to be completed by the residents	NEW OPERATIONAL MODEL Services provided by the residents themselves, common facilities
Role of the user	Passive customer (1)	Passive customer (1)	Semi-active: expressing preferences and choosing between design variants	Active: responsible for design and execution of the apartment infill	Dominant: defining the attributes of the house and acting as developer
Relationship of the concept to architecture	Does not substantially determine architectural apart from accessibility requirements	Determines a total architectural solution with standard floor plan and variable exterior	Determines certain level of modularity concerning building structure and dwelling design	Determines the structural principle of the building: division into fixed frame and open infill	Determines the spatial programme of the building
Initiator(s)	A developer	A developer and a furniture retailer	An architect and a software company in conjunction of a building technology competition	An architect	A group of senior persons who founded an association
Main source of innovation, external references	SPECIAL HOUSING Introducing features of assisted living into mainstream housing production	CONSUMER PRODUCTS Transfer of product associations and business logic from another field that is closer to consumers	TECHNOLOGY Combination of open building with a customer service model based on mass customisation	AVANT-GARDE ARCHITECTURE Loft apartments and new housing architecture in the Netherlands as inspiration	SOCIAL INNOVATION Based on examples of communal senior living in Sweden and elsewhere
Approximate time from idea to pilot	2 years, 2000–2002 (2)	8 years, 1995–2003 (3)	5 years, 2000–2005	7 years, 2003–2010 (4)	6 years, 2000–2006
Duplication	Duplicated, increasingly as versions where assistive features are tuned down	Discontinued in Finland in 2006 after five projects, re-launched in 2012 as a modified version.	Duplications realised as more restricted version than the pilot project, discontinued around 2011	Duplications planned but not realised	One duplication underway in 2012
Critical issues	Value loss of special features as caught up by the general progression of housing production	Less durable housing for the masses?	Superficial mass customisation of insignificant features, creating an impression of personalisation?	Requires design and craft skills: sharing of legal responsibility needs special attention	What happens when a resident becomes unable to commit to the common chores?

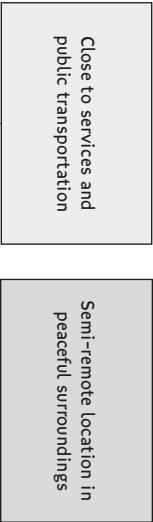
that influences the expectations of customers. The BoKlok houses bear resemblance to other mass-produced consumer products of the company, transmitting its recognisable design philosophy over the borders of product categories and fields of industry. The distinctive interior style packages in PlusKoti connect the concept to aesthetically reflexive consumption emphasising dwelling as sign of (chosen) lifestyle. Neo-loft already by its name evokes the image of highly individual loft dwellings epitomising an international urban lifestyle, familiar from movies and television. Loppukiri with its ideological background and service model based on international examples of communal housing intentionally counteracts the way of living suggested by mass market senior housing and challenges the view on seniors as a homogeneous group. The examined housing concepts evidently are commodities in the late-modern experience market that deal with packaging of aspects of lifestyles according to market criteria (cf. Giddens 1991). How the messages embedded in the concepts are actually received and interpreted by people and how they affect the purchase decisions or user experiences of the dwellings realised according to the concepts cannot be answered in the light of my material. However, the popularity of Neo-loft and also of Loppukiri indicates that the concepts filled a gap in the offering that there was demand for.

The housing concepts employ various strategies in design and production for delivering their promise that make use of technological and other enablers. Aktiivikoti relies on the addition of extra features to the mainstream dwelling product that correspond with special needs of the target group. The features are mostly home technology applications, although the concept also emphasises physical accessibility of the dwelling and the living environment. Aktiivikoti can be described as differentiation by “accessorising” the mainstream dwelling. As noted, some of its attributes highlighted as special nowadays are property of most market-oriented housing production. This has diminished the original difference of the concept in the market. Hence, Aktiivikoti threatens to be shallowed down into a mere marketing concept that creates an impression of difference by directing the attention of consumers to regular product features that are presented as special. BoKlok on the other hand is prime example of the strategy of simplification. The concept results from analysis of the financial resources of the target group and concurrent streamlining of the product and the production process. The concept provides a fixed uniform housing solution from which user choice is eliminated. Individuality is created merely by varying the building exterior according to the surroundings.

FIGURE 25.  
The composition of the case concepts. In the middle, main benefit of the concept to user (core product). Above, the elements on different levels of built environment that participate in delivering the benefit (actual product), primary elements shown in darker grey. Those with heavier outline are outside built form. Lined area indicates the extent of user control. Below, the strategies that the concepts employ and their main (technological) enablers.



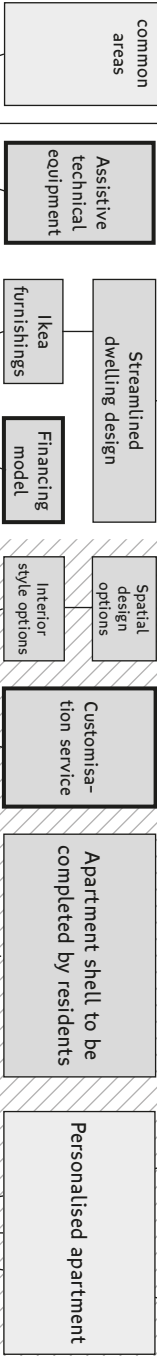
AREA



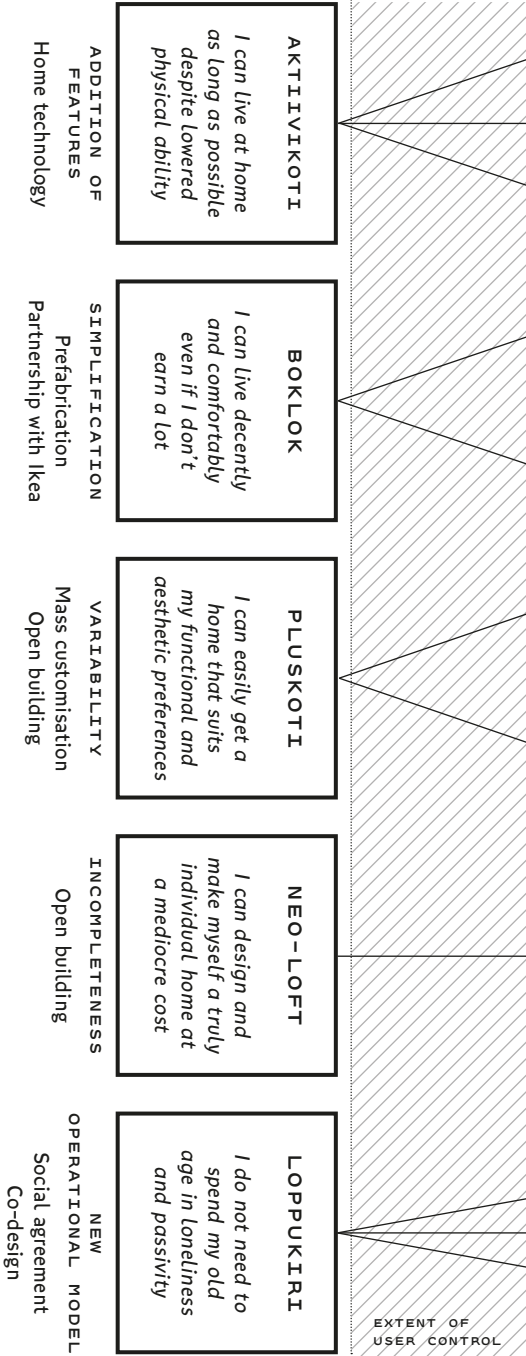
BUILDING



APARTMENT



OBJECTS



Key enablers of the concept are industrial prefabrication and collaboration with Ikea. PlusKoti on the other hand employs superficial mass customisation for delayed differentiation of dwellings. The customers are offered design alternatives on the levels of space and fixed furnishings. This strategy seeks to channel the demand for variety along a limited number of pre-designed chunks that are more viable for the builder to produce than personalisation of each individual part separately. The strategy necessitates certain degree of product modularity and a customisation service. Neo-loft is based on incompleteness of the dwelling space that is made possible by open building. In Loppukiri, activist users have initiated and controlled the entire development process. This was made possible by the founding of an association, and a collaborative design process facilitated by the architectural office.

The concepts also differ in respect to their origin and external references. Aktiivikoti and BoKlok are developer-driven, born out of central strategic concept design activity aiming at replicability in large volumes and feasibility to producers. Aktiivikoti's main design reference (intentionally or not) is in special housing, features of which it seeks to apply into regular production. BoKlok by borrowing product associations and business logic from another field which is more in tune with consumer diversity than housing cleverly utilises the strategy of suggestion identified by Schulze (2005). The Ikea brand provides homebuyers a recognisable frame of reference and highlights the nature of dwelling as a lifestyle product. This makes BoKlok perhaps the most advanced example of commodification of housing among the cases. Both PlusKoti and Neo-loft can be seen as continuation of the open building tradition. PlusKoti represents a more technology-oriented approach. Its original version is nearest to proper mass customisation among the concepts. Neo-loft albeit made possible by open building seeks its primary references from avant-garde architectural culture. Main innovator in both concepts was an architect. PlusKoti resulted from a building technology competition, whereas in Neo-loft the architect developed her idea into a housing project and negotiated it through the production system. In contrast to the other concepts, Loppukiri is grounded on social innovation by non-professionals. The initiators have learned from similar communities abroad. The role of an architect as a facilitator of the collaborative design process has also been important in the pilot of this concept.

Architectural design in the artistic meaning is not a major differentiator in any of the case concepts. However, the creative and integrative skills of architects nevertheless

seem to be important in getting new product ideas forward and into the form of viable designs. The implementation of a new housing concept may necessitate more collaborative design methods than regular production or require more technological expertise. The concepts thus hint at diversification of the tasks of architects in housing delivery.

The ownership of the concepts and the partner network needed for producing them varies. Aktiivikoti, BoKlok and PlusKoti are owned by construction companies and labelled with brand names. Nevertheless, nearly similar solutions are offered by other companies (with the exception of BoKlok). It seems that competitors easily copy the features of successful novelties. The customisation options first introduced by PlusKoti, for instance, have become a standard in the field. It might also be that the developers are just following the same global trends in the housing field. The role of international examples in concept development is one topic that my material does not cover. Key partner in BoKlok is a furniture retailer and in PlusKoti the software company providing the customisation service. Neo-loft and Loppukiri by contrast are not owned by or tied to specific companies. Neo-loft despite being “intellectual property” of the creating architect and Loppukiri of the seniors’ association can essentially be copied by anyone. These concepts have included more collaboration with public actors than the developer-driven ones.

The role of the user in Aktiivikoti and BoKlok is passive. Later versions of Aktiivikoti include customary furnishings options, and individual modifications are possible at a separate price, but the concepts as such do not include manipulation by user on any level of the dwelling product before move-in. In PlusKoti, the user is given a semi-active role as a customer who can make choices between design alternatives during the building process. The residents of Neo-loft have an active hands-on relationship with their dwelling. They are responsible for the design and execution of the apartment infill within the frame defined by the architect. The user-developers of Loppukiri are in a dominant role, able to decide on key attributes of the house and on many features of their dwellings. The latter two concepts expand the user control significantly in comparison to regular urban housing production but also demand more skills and investment of time from the initial users. As seen in the Neo-loft case, the users may also face higher financial and other risks than in production where their control is more limited. This especially seems to concern the first pilot project of a new housing concept. On the other hand, one can assume that the user value of a “deep” housing solution to the development of which the resident has been strongly

committed is higher than the value of a more “superficial” solution offered by a developer. All people, however, probably do not value such individuality in dwelling, are not willing to undertake the arduous work the accomplishment of it would require in the present system, or do not have the necessary capabilities. The possibility for some degree of aesthetic personalisation or merely a generic well-designed flat presumably is quite satisfactory alternative for many users.

In the case concepts, the main point at which user value is created varies. In Aktiivikoti and BoKlok, adding of value happens by producers before the users get involved. In PlusKoti, most value creation takes place in the delayed differentiation phase, facilitated by customer service personnel right after sales. Neo-loft and Loppukiri shift value creation towards the use phase. In Neo-loft, most active period is after the semi-finished apartment shells are handed over to residents and they start building the infill. In Loppukiri, users participate in value creation during both development and use. The collaborative design process as such adds value to the residents but most significant value of the concept is realised during residency when the communal service model is in operation.

#### 4.3.3

#### HOUSING CONCEPTS AS MEDIATION BETWEEN USERS, PRODUCTION AND DESIGN

I will next discuss how the studied housing concepts act as mediative devices between the realms of use, production and design of housing. Here, a reference can be made to the three tensions impacting the design of dwelling in late-modern society that I identified earlier (Chapter 3.2.5). The housing concepts address all three of the tensions: the tension between singularity and seriality in housing production, the tension between specificity and generality of housing designs in relation to individual users, and the tension between novelty and conformity of designs in relation to other designs in the market.

Firstly, the concepts serve the reconciliation of singularity and seriality on the level of the physical dwelling product, thus mediating between the requirements of industrial mass production and unique housing projects. The concepts define the essential design requirements or parts of the product that are to be duplicated to provide the intended benefit to user and/or the producer, but leave architects in charge of individual duplications considerable freedom in designing other features of the product. The concepts show examples

of differentiation of some significant components of the dwelling product according to the range of user needs and standardisation or opening of less significant components. Even if the case concepts do not effectively employ mass customisation or co-configuration, they are connected to the emerging flexible and collaborative production paradigm. Both physical strategies of flexibility (PlusKoti, Neo-loft) and socially driven co-design methods (Loppukiri) are represented among the cases. The concepts also act as frameworks that integrate heterogeneous components provided by multiple companies and other agents into a whole. Intangible concept components in my material included a financing model, a customisation service and a service model.

The case concepts exhibit different relationships to housing architecture, ranging from near indifference to complete specification of architectural form. Aktiivikoti does not substantially dictate architecture aside from accessibility requirements. BoKlok on the other hand determines a total architectural solution with standard floor plan and variable exterior. The facades of the houses can be realised in many architectural styles. The facade variants of BoKlok demonstrate a Baudrillardian “secondary seriality” that enables easy adaptation of the concept to changing fashions, tastes and surroundings without compromising efficiency of production. PlusKoti determines certain level of modularity concerning the building structure and dwelling design mainly on the levels of surface materials, furnishings and partitioning. It does not constrain the outer architecture of houses and accommodates to any house type. Neo-loft determines the structural principle of the building: division into a fixed frame and open infill. In Loppukiri, the concept merely determines the spatial programme of the building, i.e. the joint facilities necessitated by the operational model.

The independence of duplicable housing concepts from specific house designs makes them resilient. The concepts allow themselves to be realised as very diverse locally adapted designs. During the localisation of a concept, architecture and the geographic place with its special characteristics become components of the end product. The underlying concept thus only partially determines a final dwelling product. The concept can standardise or lock some parts of the product, like BoKlok, increase the variability of some parts, like PlusKoti, or unlock some parts so that they can be manipulated by users, like Neo loft.

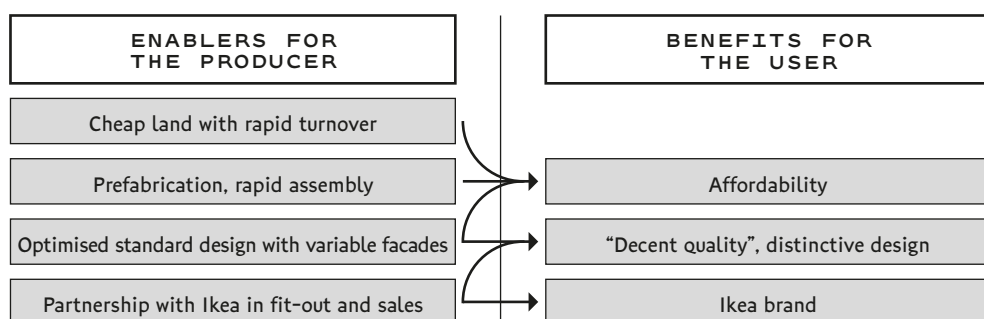
Along the evolutionary analogy, there are in a dwelling built according to a housing concept some attributes (some type of difference) that result from replication of the

concept and other attributes that are moulded by the specific local context and the specific production organisation including the architect and other designers, as well as the user. Criticism about the homogenising influence of commercial housing concepts to the offering of housing therefore is partly unjustified. I would claim that there are more eminent factors within the housing regime that impose uniformity on housing production, possibly related to the established way of building and the fixation to a few dominant dwelling designs.

Secondly, the housing concepts mediate between producers and users of housing, seeking to balance user value and producer value (user-specificity and mass-producible generality of products). They deal with translation and channelling of user needs into product features that are feasible for the producer to deliver. The concepts serve the differentiation of products both internally, within the product portfolios of companies, and externally, in relation to other products in the market and to various consumer groups. Through their experienced and marketable properties they single out and communicate to consumers a set of benefits anticipated to outweigh the benefits of competing products and thus provide the producer a competitive edge. According to my company interviews, there is a two-way tendency in the Finnish housing industry towards simultaneous standardisation of products on the level of product structure and production process, and their diversification and personalisation with respect to the market and individual customers (see Chapter 4.3.3). Housing concepts play an important role in this process. My interviews showed that housing concepts feature elements that can be visible or invisible to the end user. The delivery of their core benefit to user typically necessitates the fulfilling of certain basic requirements from the producer side. These “hidden” elements or specifications behind housing concepts have not been recognised in earlier Finnish research (e.g. Norvasuo 2008 & 2010, Väliniemi et al. 2008, Aaltonen et al. 2011).

BoKlok provides a good example of the negotiation between user value and producer value and of the relationship between underlying specifications and the experienced product attributes in a housing concept. To make possible its promise of “affordable dwelling of decent quality and good wholesome design in peaceful surroundings”, several pieces need to be in place (see Figure 26). The first prerequisite for the business case to be realised is cheap land on the outskirts of a city that is rapidly buildable. The location should be accessible by public transportation and not too far from services. An important requirement is that the building process is highly industrialised, meaning prefabrication and rapid serial

assembly of the buildings. Replication is further supported by spatially optimised standard house design with variable facades. (c1) In BoKlok, careful selection of land, efficient industrial production method and simplified design conjoin to enable the affordability of dwellings. Partnership with Ikea in design and sales brings in a distinctive “look” and price-brand positioning that prepares people for the downsides of affordability.



Thirdly, the housing concepts facilitate general diversification of the offering of housing and diffusion of innovations in the field. Via new concept development, innovation, whether technological or social by origin, can be articulated and implemented into production. This especially concerns such innovations that are beyond the scope of mere building design. As suggested by previous research, it seems that housing concepts in their heterogeneity and detachment from specific designs can support collaborative product development among diverse networks and across professional boundaries. The concepts demonstrate a mode of housing design that operates on a conceptual and strategic level beyond and precedent to physical implementation design. This type of design activity is rather new in the field. The concepts show how novelty (valuable difference) in housing can be intentionally designed, made into a duplicable format and disseminated in the market. Rather than counting on coincidental success of randomly different one-off housing projects, the concepts represent a strategy that seeks to identify core success factors of dwelling products beforehand and standardise them to the use of the industrial production system and (other) designers. This topic is elaborated further in Chapter 4.4.

As a summary of the case analysis, I propose a conceptual model of a housing concept (Figure 27). It complements the theoretical understanding of housing

FIGURE 26.  
The relationship of visible and invisible elements in the BoKlok concept.

concept provided by previous research. Approaches to housing concept in architectural and housing studies have somewhat overlooked its commodity aspect and correspondence with the general usage of concept in business. This may be due to prevalence in the perceptions of architects of the traditional artistic definition of concept, seen as guiding design idea (see Chapter 3.3). Architectural studies also have not properly grasped the composite nature of a housing concept as an entity that can comprise elements beyond built form. Business oriented studies about the topic, on the other hand, lack in comprehending the materiality of the concepts and their specific relationship to built form, as well as those peculiar characteristics arising from the singularity and locatedness of dwellings as artefacts that make housing concepts different from concepts in many other fields. My research sheds light on the conjunction of the differentiated commodity dimension and the material artefact dimension in housing concepts.

Housing concept as manifested in my material can be defined as a specification of a novel housing solution where the core idea is duplicable. A housing concept defines a whole and its constituent designable parts to deliver an essentially intangible problem-solving benefit to the user. It typically corresponds to a recognised market demand or gap in the offering of housing. By singling out and suggesting to consumers features of the dwelling product anticipated to be experienced by them as valuable, commercial housing concepts serve the alignment of user needs and lifestyles along the industrial production system. On the other hand, they act as devices for collaborative product development within the housing system that can also help transfer users' ideas into viable products. The concepts serve positioning and differentiation of dwelling products in relation to various user groups and to other products in the market. They deal with systematisation of product variation and systematisation of the relationship of the dwelling product to user. This makes them similar to other consumer products and demonstrates the commodification of housing in late-modern society.

Regarding the types of concepts presented in Chapter 3.3, housing concepts represent one variation of the "standardising template" usage of concept prevalent in engineering, business and marketing. This demonstrates the becoming of industrial urban housing as a commodity among other commodities, and directly positions it to the realm of individualised consumption. However, housing concepts also display characteristics of the other types of concepts. A concept can rely on a guiding designerly idea, as the Neo-loft. Moreover, housing concepts serve the probing of new



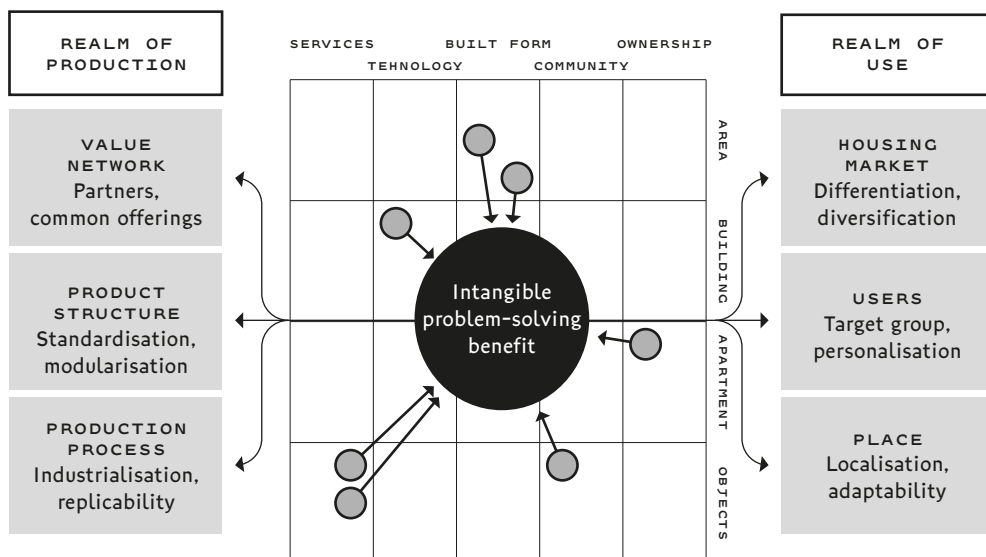


FIGURE 27.  
A conceptual model of  
a housing concept.

markets and transfer of innovations to the field, much like the anticipatory concepts in technology industry. The more socially driven concepts support collaborative housing development, assuming characteristics of “boundary objects”. The “code” aspect in housing concepts is related to their role as instructors of singular designs.

In the housing industry, producers develop and sustain (portfolios of) housing concepts of which singular, local adaptations are derived according to need. This differs from consumer product industry, where the role of concepts is more limited to the product development process and where they provide the basis for mass production of uniform, industrially replicated products.

As mentioned, what also distinguishes housing concepts from other products and product concepts is their specific relationship to built environment. The concepts are constructed as bundles of attributes (designable elements of the dwelling product) to deliver their anticipated overall benefit that are situated on various hierarchic levels of built form. Even if most of the concept elements concentrate on the physical dwelling, the concepts also contain differentiating elements that are beyond built form, such as services and technology. This indicates the expansion of dwelling as a product and object of design beyond the scope of housing architecture.

A housing concept provides a generic template or rough “design” from which multiple particular, locally adapted housing designs can be derived that are only partially

determined by the concept. The extent to which a concept determines built form and the strategy by which it delivers its promise can vary. The concepts operate within the hierarchy of built form by standardising, varying and opening certain parts of the dwelling product. A key finding of my study is that housing concepts have a material depth. A concept can be materially superficial, operating on the surface levels of the dwelling product, or materially deep, addressing the building or the urban area. This affects its duplicability. There is variation in the origins of housing concepts and in their ownership. A concept can focus on different phases in the value creation process. What also varies is the relationship of the concepts to user and the extent of user control allowed by them. The case concepts can be divided into technologically oriented and socially oriented concepts, even if a concept can also aim at combining both dimensions. Some concepts (Aktiivikoti, BoKlok, PlusKoti) primarily rely on producer-driven technological product and process enhancement by utilisation of methods such as mass customisation. Other concepts (Loppukiri, Neo-loft) have resulted from user or designer-driven, publicly supported, collaborative product development efforts where producers have had a secondary role. An additional important dimension in concepts is that of marketing and branding. The materially more superficial concepts especially rely heavily on branding as means of differentiation.

Housing concepts mediate between the contradictory realms of production and use. They serve the reconciliation of industrial mass production and the increasing demand for diversity and individuality of housing. A housing concept has a number of channels or interfaces to both directions through which the mediation happens (see Figure 27). These can also be seen as designable components of the concept. In the producer side, developing a housing concept typically involves identifying a partner network needed for providing its composite elements, modifying the physical product structure and design according to the concept, and changes to the production process. Here, overall emphasis is on streamlining and duplicability. The concept towards this direction serves standardisation and systematisation of product variation. On the use side, a housing concept seeks to establish connection to certain target group by tapping into their supposed or expressed needs. In addition, it often enables some degree of personalisation by user. Concepts also relate to other products in the market from which they seek to differentiate themselves. Towards the direction of use and the realised built environment, a housing concept thus serves the diversification

and individualisation of dwelling products. A further aspect that needs to be addressed on this side is the relationship of the duplicable concept to singular housing projects.

#### 4.4

## Users and design in residential product development

### 4.4.1

#### THE VALUE CREATION PROCESS AND ORGANISATION OF PRODUCT DEVELOPMENT IN THE INDUSTRY

In the following, I shall give an overview of the residential value creation process in the industry and reflect upon the role of users (customers) and design in the process. I will also discuss the housing developers' perceptions about dwelling as a product and about its diversification. The section is concluded by identification of several bottlenecks of diversification in housing production.

The production of market-oriented owner-occupied housing in Finland is usually based on a so-called founder contracting model, where the developer establishes a cooperative housing company on whose behalf it executes the project before selling the shares of the company to customers. Decision to break ground is based on advance booking of the flats. In 2006, nearly 80 per cent of new blocks of flats were produced in this manner (Vainio 2008, 12). The shares in the housing company grant their owner the right of possession of a specific flat; the housing company is responsible for the upkeep of the building and joint facilities. Market-oriented housing production is financed with private loans and state-subsidised production with state loans or private loans with a state interest subsidy. (The Housing Finance and Development Centre of Finland ARA, [www.ara.fi](http://www.ara.fi).)

Main phases in a commercial residential development process are land acquisition, project planning, product definition (design), construction, marketing and sales, and customer care after move-in. The design phase can be subdivided into programming, systems design and detailed design, including both architectural and engineering design. The process takes approximately 5–7 years. (Skanska Annual Report 2010, 38; Sohlenius 2006, 8, 23–24.) Speculative house building essentially aims at maximising the profit on

investment in buildable land. The purchase of land is based on a detailed analysis of local conditions as well as economic and demographic factors. Early definition of the target customer category to provide guidelines for design and marketing is considered essential in value creation. The developers basically aim to “create a neighbourhood with clear character based on the potential offered by the surroundings” that would attract customers in the specific local market (Skanska Annual Report 2010, 38).

The process involves business and project developers, architects, salespeople and builders, collaborating with urban planners, other public authorities and other companies. In large construction corporations, housing development and construction are separate business sectors. The developer is responsible of land acquisition, project development, design acquisition, marketing, sales and customer care. The builder takes care of the construction of the houses. For each housing project, a project team led by a project manager is set up. Architects and other external consultants are commissioned to individual projects. The extended value network includes myriad subcontractors and providers of building parts, technology and services. My interviews mainly focused on *residential product development*. That covers the early stages of the residential development process as well as more strategic and conceptual development activities aiming at creation of new products and services beyond individual housing projects.

The residential product development team in Company X consists of six persons: the product development manager with a background in economics and business administration, one architect, one interior architect, one technical specialist with expertise also on sustainability issues, and two market analysts. The team is responsible for product development, market analysis and consumer insight. Product development includes design and development of the customer offering and new concepts, as well as management of the assortment selection process and assortment concept development. Product development is also done in individual housing projects. In addition, technical product development activities take place on the corporation level. There is a cross-Nordic unit that creates technical solutions, specifications, processes and tools, which are being applied in national residential projects.

In Company Y there is a combined housing development and marketing team comprising less than 10 persons, led by a development manager who is architect by education. There are one or two other architects in the team

and one interior designer. Product development is done in close collaboration with a larger technical development unit mainly employing construction engineers.

Company Z does not have a designated product development team. Development activity is organised under the director of finance. New concept and service ideas are brought into the management group where they are discussed and developed further. Expertise related to services, technology, marketing and investment are considered important in product development. As the company is not a builder, it does not pursue technical product development activities of its own. The main way to develop new solutions is through initiating pilot projects together with committed partners.

#### 4.4.2

#### USER KNOWLEDGE AND AGENCY OF USERS IN MARKET-DRIVEN HOUSING PRODUCTION

I will first look at the specific types of knowledge about users in different phases of the residential development process, relying on a distinction between market knowledge, customer knowledge and user knowledge (Hyysalo 2009, 19). The beginning of the development process is dominated by market knowledge. In the project planning phase, the user is primarily perceived as member of a local *demographic target group*. The value creation process begins with identification of the potential group of buyers whom the specific area, price level and type of project would attract. This is based on information provided by market analysts about the local demand and offering. Housing projects are typically targeted at certain age groups or family types. This mainly affects the selection of dwelling types and sizes. One informant said that a target group is mostly just used in marketing and has little influence on the design of the product. Designing the products too specifically for a narrow group would be a risk in the thin local housing market. As seen in the previous chapter, developers utilise *customer segmentation* tools similar to those used by other companies in consumer business, building on the profiling of thousands of respondents according to their values, lifestyles or consumption preferences. The actual impact of segmentation to the offering is questionable. They show mainly in marketing and as stylistic variation in interior fit-out options. A further source of knowledge is general *trends in the market*. The development team follows professional and public discourse on housing and what competitors are doing. They may also participate in *research projects*.

When real customers become involved in the process, emphasis shifts to customer knowledge. Main sources of customer knowledge are surveys and direct customer feedback. In marketing and advance sales phase of a new housing project, the developer gets information about *customer response* to the product and its features. Standard *customer satisfaction surveys* are used for measuring product satisfaction and quality of service. Surveys can be realised after purchase, at move-in, after warranty repairs, regularly during residence, and when moving out. They can be complemented with segmentation tools. The providers of rental housing receive additional information about their customers through *application forms*. This data is presently not much utilised. *Customer feedback* is recorded by the customer service personnel, *reclamations* being one important source of knowledge. One of the companies has a web-based *customer panel* comprising 400–500 persons that is used for targeted surveys and getting rapid feedback on new product ideas. 4–5 surveys are realised annually. In addition, *concept testing* with customers is done occasionally.

There is a marked lack of *user knowledge*, in-depth contextual knowledge about individual users and user communities, in the residential development process. At least this type of knowledge was not explicitly referred to in the interviews. It may be that knowledge about some aspects of user experience such as functional requirements of dwelling is so self-evident and inbuilt within the housing system that it does not need highlighting. The regular architectural design process perhaps solves many of the issues related to human experience sufficiently well so that they need not become the concern of developers. As will be discussed later, the mainstream dwelling product may be “locked” by the regime so that its further refinement or differentiation is considered purposeless or downright impossible.

In any case, I would argue that in the otherwise so calculated and seemingly rational value creation process of market-oriented housing, no systematic methods are available for ensuring the realisation of user value. There is a gap between knowledge about individual users and the designable attributes of dwelling. The developers are partially at loss about which product attributes mean what to whom, how to effectively impose knowledge about users to the development process, and how to measure the user value of end products. Despite access to extensive market and customer knowledge, the relationship between products and their anticipated users is weak, random and uncontrolled. At best, design decisions happen through “informed guessing” based on professional experience. In the light of my data, users and user knowledge are not a fully

integrated part either of strategic level residential design and product development activity or of architectural design within singular projects.

The difficulty of translating obscure, unknowable “market demand” into product attributes is attested by previous research. According to a British study on the perceptions of house builders (Shove 1999, 135), builders share a common reluctance to tamper a proven product and ground decisions about house design, layout and specification mostly on gut feelings and tradition:

*It is difficult to know exactly why a house did or did not sell and, unable to quantify the precise value of innovation or to unscramble the ingredients of success, builders routinely rely on previous experience. In their words, they know what sells houses because their houses have sold. And because they have sold, they must have provided ‘what the market wanted’. This incipient conservatism is tempered by the need to keep up with the competition. Lacking any real market to refer to, builders create an illusion of market demand by constant reference to the actions and decisions of their immediate rivals.*

Customership is the sole channel through which users are given personal agency in regular commercial housing production. Being a customer means playing a part in a predefined process with designated points of interaction where manipulation of some aspects of own dwelling is possible within limits set by the producer. In the case of owner-occupied housing, customership begins from the deal or advance booking. At that point, the clients are typically assigned a customer service person with whom they go through the specification and customisation process of their flat. To ease the work of customer service personnel, many companies offer online services where customers can try out the range of design alternatives as visualisations and see how they influence the price. After move-in, emphasis of customerhip shifts to attending to repair needs. Warranty repairs are over in about 1.5 years, after which customer contacts decline. A customer-user is mainly able to exercise power by approving or rejecting pre-designed elements of dwelling. For producers, customership is means to regulate user expectations, user experience and degree of user involvement. Customer service is considered an important phase in value creation and a way to compete in the market.

The interviewees did not see *co-design* as very realistic in the case of industrial housing. One reason

for that is the long lead-time in housing production which is believed to hinder the willingness of people to commit to such processes. It is also uncommon that all residents of a house would be together already in the design phase. One company had tried out giving a small group of residents the opportunity to participate in the design of their dwellings in a housing project where that exceptionally was the case. In this sense, delayed differentiation represented by the current interior customisation services seems one of the few ways available for providing individuality within the constraints of the existing production process, and as such quite viable. Selecting between pre-designed alternatives was seen as suitable mode of “participation” for laypeople. More extensive inclusion of them to the development of housing would be expensive, complicated and perhaps even harmful, as implied by one informant.

The industry’s reluctance to assign any influential role to users other than as customers can be interpreted as attempt to protect against all threats to market hegemony. Superficial levels of the product are those that the user can be allowed to control without compromising the profitability of the housing business. “Deeper” user involvement transforming the more “wicked” (and possibly more significant) levels of housing is prevented by the system. On the other hand, it may be that flexibility in the furnishings and partitioning levels of dwelling in fact is what makes enough difference for the majority of users and therefore is quite satisfactory. Considering user-initiated housing projects and new production models such as group building, the developers did not see them as a viable business case for themselves. Despite that, innovative new projects in the field are followed closely because they show for what kind of housing solutions there is demand in the market and provide valuable input to companies’ own product development.

#### 4.4.3

#### DEVELOPERS’ PERCEPTIONS OF USERS AND OF THE DIVERSIFICATION OF DEMAND

The developers had a rationalistic view of the decision-making process of customers. Location is considered the primary factor steering housing choices. Then come number of rooms and price per square metre. People are thought to be well aware of the local offering and average price of housing in the area. The price level in the neighbourhood determines the type of buyers and therefore also to a large extent what kind of housing



is built there and the price of it. Secondary to location, size and price, customers emphasise the functional and aesthetic quality of the dwelling, especially the kitchen and bathroom, and possibility to customise the flat. Location and quality of the product were thus seen as the two main competitiveness factors in the housing business. Note the distinction.

80 per cent of the present customers of Company X are in their forties or older. In some houses the majority can be over 60 years old. Typical customers are couples whose children have moved away. Families with children are rare because in the Helsinki region the flats produced by the company are expensive and in smaller towns “families with children do not live in blocks of flats”. Company Y divides its customer base along its three main products. The basic product is undifferentiated in the sense that it does not have a clearly defined target group. The customers probably are rather similar than those of Company X. Seniors from their late fifties on, and (younger) one or two person households looking for affordable living are the target groups of the two other products. Most of the rental customers of Company Z are small families – singles, couples or single parents with child(ren). They are also described as city dwellers. The target group of owner-occupied production varies depending mainly on location.

Housing preferences were perceived by developers as dependent on life stage, family size and socio-economic status. The stereotypical division between families with children looking for a detached house and small households preferring blocks of flats came up in the interviews but was also criticised as overt generalisation. When asked about differentiation of customers beyond demographics, the informants mainly drew on customer segmentation models utilised in the companies. For example, Company X has identified four value-based segments. The harmonious emphasise home as safe and private realm, the social as arena of togetherness, the trendy as means of self-expression, and the efficient as functional instrument supporting a life that mainly happens outside the dwelling. Aside from marketing, the role of customer or consumer segmentation in housing business is not that evident. At present, segments do not show in the offering of Company X. When looking at the residents of finished housing projects, however, it can be seen that the projects often unintentionally attract certain segments. The efficient choose a location close to train station and shopping mall and the trendy move into dwellings with extensive customisation options, to name some examples. Apart from attitudes towards the living environment and customisation of dwelling, values may affect people’s investment in dwelling:

*Given 5.000 euros, the trendy would buy the latest designer chair, the social throw a party for their friends, the harmonious build new shelves to the garage and buy an exercise bike, and the efficient travel somewhere and definitely not invest it in their home.*

Purchase process analyses indicate that customers also diverge along the phase of the purchase process that they value most. For rational investor types, making a good deal is the high point. More intuitive persons may focus on the exciting moment of finding their dream dwelling and consider the ensuing choices and practicalities a nuisance, whereas some people value the customisation phase most. For do-it-yourself types seeking for old flats that they can personalise, the most value-adding phase begins after moving in. In rental housing, duration of residence is recognised as one differentiating factor. There are “lifestyle renters” who spend their entire housing career in rental flats. Some people “pass through” a phase of renting, typically in conjunction of a life change. Settling down for good increases the weight of dwelling features. Quality of dwelling and its compatibility with own preferences become more important. Temporary commitment makes it easier to overlook or adapt to unsatisfactory solutions. Relationship to dwelling is also influenced by tenure. For owners the dwelling is more an “asset” whereas renters perhaps see it more as “service”.

Interestingly, the interviews suggest that diversification of customer demand concerns just a limited group of customers and is concentrated to certain type of areas. According to the developers, the demand for personalised solutions is significantly higher in bigger cities and there in the premium end of the offering. New housing projects in expensive areas like Lauttasaari in Helsinki attract customers who value the aesthetic quality of dwelling and demand a high degree of customisability.

*Experience has shown us that in cheaper housing developments in smaller towns people don't really need more choice, they are quite happy with the basic solutions. [...] Whereas in the premium end, it's a rule that nothing serves [laughs]. There people have much greater need for customisation just for the sake of it. It's terribly important for them that their place doesn't look the same as the neighbour's.*

Individuality in housing production here appears as a relatively marginal question that can be answered by increasing the modification options available to customers

and by superficial mass customisation on furnishings and partitioning levels of the dwelling product (cf. Mäntysalo & Puustinen 2008). What the quote also implies is that regardless of actual individuality (difference) of the end result, the customer service process and ability to participate in the configuration of one's own dwelling can be enough to create a feeling of individuality and distinction from others. The developers brought forward that the majority of customers are conservative and avoid risks which makes them reluctant to adopt novel housing solutions even if those would be made available in the market. This is one of the "consumer myths" identified by previous research (Rask et al. 2008).

*Even if the customers whine about everything being the same, they somehow seem to expect the same. If you make something a bit different, like loft apartments, location becomes hugely critical. During the recent economic downturn all even slightly different dwellings were left unsold, those about which you had thought 'wow, for once they make something nice and different'. So differentiation works during economic boom and in the capital region on good sites, but elsewhere...*

Yet, the informants were of the opinion that the demand for housing is becoming more differentiated in the future and the customers more diverse. Due to continuous rise of the living standard, people's expectations about the dwelling product were deemed to become higher. It was anticipated that in the future especially young people in cities will be more segmented and in a different way than present customers. On the other hand, seniors were mentioned as a growing and increasingly heterogeneous group. Households with a changing number of members (e.g. due to shared residence of children) came up as one distinctive customer segment that sets new demands for the flexibility of dwellings. It was also suggested that experiential goals in dwelling (service experiences, comfort and easiness of living, "thematic living" connected to lifestyles or hobbies) are becoming more important. In general, the developers thought that there will be an increasing number of qualitatively differentiated customer groups in the future but that the groups will be relatively small and close to each other and the market will still be dominated by middle-of-the-road masses looking for conformity with existing housing ideals. The participants were also sceptical about the significance and impact of diversification of customers to the designable material features of dwelling, which were considered to be largely universal and hence undifferentiable.

*I believe that there will be more diversity [among customers] than there used to be. But how big the differences are and how they will affect the dwelling itself, I don't know. Perhaps the dwellings will be the same but the way to relate to them will vary.*

#### 4.4.4

#### THE DWELLING PRODUCT: DIFFERENTIATION, EXPANSION AND STANDARDISATION

The interviews support my preposition of the qualitative homogeneity of industrial housing production. The participants readily admitted that most producers in the market offer the same. It can be argued that the properties and overall quality of the mainstream dwelling product are determined by the regulatory system and requirements of the building industry and consolidated by conventional housing design. The dwelling product has been optimised along the ends of the housing regime and locked into what has become a shared standard, a dominant design that is bred as endless minor variations across the market. Attempts to relock the situation meet systemic resistance and are a risk to companies. Finland is seen as too small a market to allow substantial differentiation of housing. As explained in the previous chapter, customers are conservative or at least perceived as such. Housing is so expensive that most people are not willing to pay extra for special solutions. It is also felt that urban planning and the building regulations force similarity on housing. All this contributes to why the mainstream housing industry delivers homogeneous products that just about meet but rarely exceed the expectations of users. Following quotes are from the three informants respectively:

*Well, the offering doesn't really differ. The product is more or less the same, but if service and such things are counted in there may be small differences [between companies]. [...] Then there are competitors who come out with one building where the energy issues are taken care of or there's something exclusive, wanting to showcase that we are doing something like this. But the truth is that we are very much in the same train. I would argue that we all practically offer the same product.*

*It's true that [the housing concepts] are all rather similar. I would guess that for consumers these concepts and [brand] names mean quite little these days. [...] It's just a selection of a target group whom to address.*

*The challenge is that nobody falls in love with our products, or hates them either, they are just okay. [...] I think we are afraid to make anything special because someone might dislike it. It shouldn't matter if someone doesn't like [our products] if someone else loves them. We have been very timid in arousing emotions.*

Meaningful differentiation of products was deemed difficult, even if the question of diversification of housing production in general was considered relevant. The informants stressed reciprocity of demand and supply: people “only” demand things that they know of and that mostly already exist in the market, and producers “only” supply things that they recognise there is realistic demand for (cf. Shove 1999). The dynamics of the market thus was thought to ensure that the offering evolves to cover the scope of most significant user needs reasonably well. It was felt that there are not many ways in which the prevalent physical dwelling product can be differentiated apart from “natural” architectural diversity. In the words of one participant, “everyone needs the kitchen, hallway and bathroom”. Elements *outside* of the physical dwelling product (although perhaps influencing some of its physical features) were seen as central means of differentiation in the market by the participants. This demonstrates the expansion of dwelling as a product and object of design. That is evident in both the current offering and the new product and concept ideas described by the respondents.

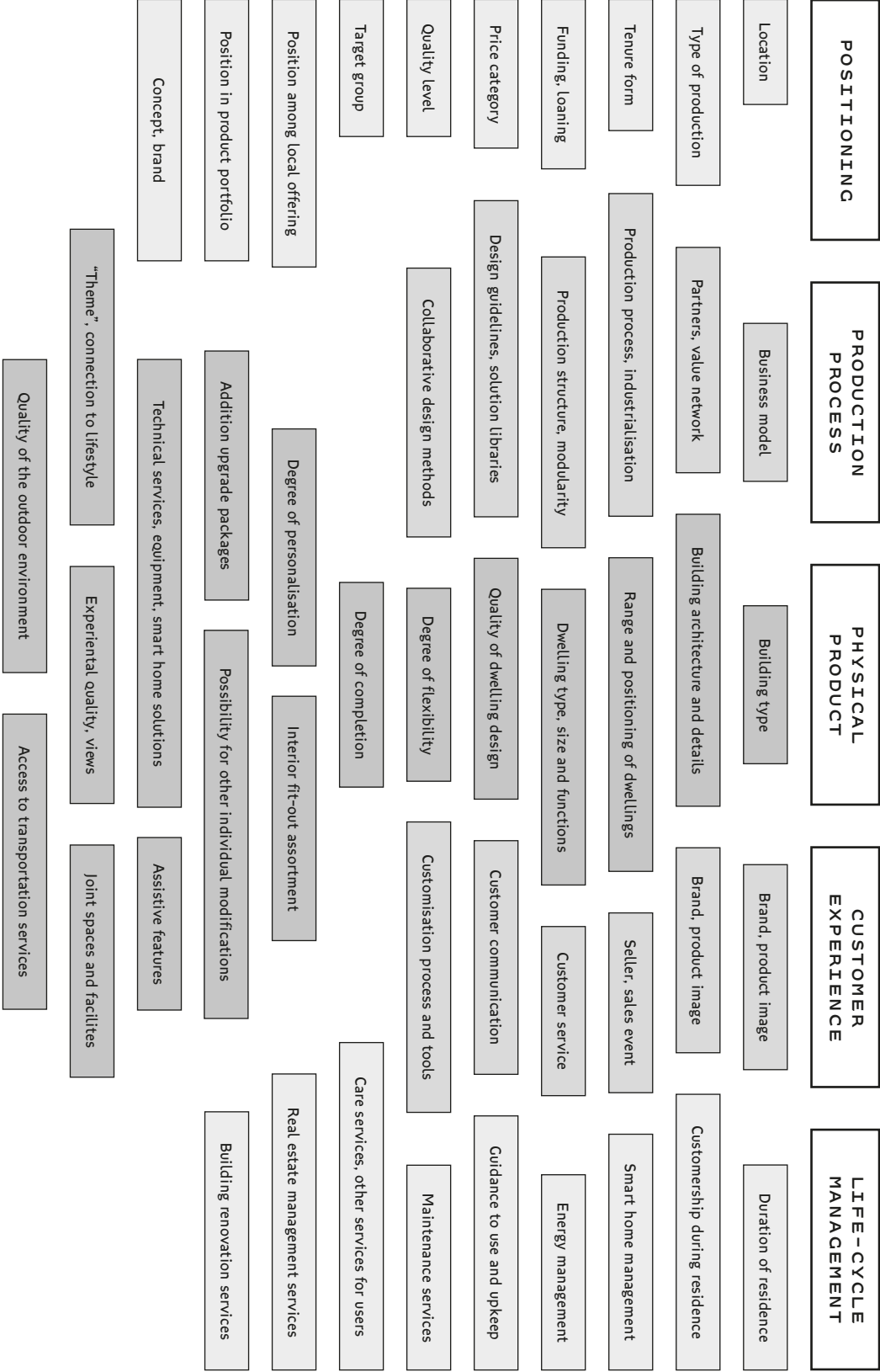
The quality of customer service was deemed an important means of differentiation. One participant referred to an internal survey according to which 60 per cent of the customer service personnel had considered the physical dwelling product being the main factor contributing to customer satisfaction, whereas to 70 per cent of the customers it had been the people they had met and the service process itself. This participant argued that product development in housing is moving closer to *service design*. The physical product might remain the same but the service process variate according to customer segments or individuals. Efforts to enhance the service experience include packaging of services and concepting of customer communication throughout the process. Another interviewee maintained that the possibility to truly differentiate by service or branding is rather limited. One could claim that the systemic locking of the mainstream physical dwelling product has led to a situation where experiences of difference among a homogeneous offering are created by cosmetic means such as personalised customer service, branding with carefully fabricated connotations to

lifestyles, or marketing that inflates the significance of regular product attributes. Differentiation is achieved by adjusting intangible elements through which perception of the product can be altered without having to vary its physical features. Housing concepts and brands here act as filters that mediate between users and the offering of housing by helping/forcing them to channel their needs and preferences along product features suggested by producers as matching.

The interviews indicate that the definition of customership in market-oriented housing is extending towards the use phase. There seems to be a tendency among developers to see a more continuous role for themselves in value creation. Several reasons for this were mentioned. Legal responsibility of the board in housing companies has increased which means that they need more professional expertise. The real estate management field is fragmented and the companies small, which opens up opportunities for new players. Increased amount of technology in buildings and the demand for energy efficiency highlight the impact of residents' behaviour to sustainability and durability of buildings during their life cycle. The residents are, for instance, given guidance to the proper use and maintenance of the technical equipment of their dwelling by Company Y. Steering of user behaviour towards sustainability with the help of energy consumption monitoring and other smart home solutions was seen as growing field by one participant, who also anticipated the diffusion of complete facility management services ("housing operators") from workplaces to residential buildings.

Differentiation in the housing industry simultaneously aims at cost-efficiency of production. Product development not only deals with creation of variety but with systematisation of it: widening of the product range but with increasingly standard parts and processes. In market-oriented owner-occupied housing, packaged interior design themes like those in PlusKoti nowadays are the norm. Company Y for instance has five themes to choose from. Within each theme, there is a further level of choice between alternative colours and materials. It is also possible to make choices across the packages or order additional upgrade packages or individual modifications at separate price. This can be described as delayed differentiation relying on some level of mass customisation. The degree of personalisation can also be used as a differentiating factor. Highly modifiable dwellings can be offered for individualistic upmarket customers and more generic standard dwellings at a lower price for other segments. In addition, the companies divide their product portfolio according to demographic customer segments (such as families

FIGURE 28.  
Differentiable (designable)  
elements of the dwelling  
product mentioned in  
the company interviews.  
The elements roughly  
follow the phases in  
value creation process of  
housing as they deal with  
strategic positioning of  
the product, the production  
process, properties of  
the physical product,  
customer experience, and  
use (cf. Swink 2000).



with children, seniors) and price categories. Company Z is using star rating familiar from hotels to classify its stock of rental flats and to manage the expectations of customers.

The urban housing production of Company X is divided into two price categories, “Core” and “Premium”. These “production concepts” relate to construction technology and are not seen by customers. They originate from a cross-Nordic, corporation level project that concentrates on industrialising the housing production process. More basic Core production seeks cost-efficiency by utilisation of prefabricated building elements, such as wall elements and bathroom modules. The external architecture and apartment plans are still relatively variable. The Premium production uses less standard elements. It is applied in more expensive locations. Showing features of mass customisation, this type of technical standardisation not only serves efficiency of production and the building process but allows diversification of the offering in a more sustainable way. The firms are continuously seeking for a balance between those components of the dwelling product that can remain the same and those that need to be varied.

*One thing that we are increasingly developing is that even if we might be standardising, concepting and copying behind the scenes, outwards it's more about differentiating [the products]. Two housing projects can be completely different even if they are similar with respect to building technology.*

*The building industry is still so local and culture-specific that some essential work stages are done differently in various parts of Finland. [...] On the other hand, quality of the end product and certain visible product specifications that brand our product should be the same everywhere. The interior design themes are an example of a solution that goes through regardless of culture, we sell the same concept to all customers. [...] There are many things that definitely are worth standardising but also things that should never be standardised. [...] The benefit of standardisation also varies depending on the project. In some projects, the stairway is a central element that should be made individual. For the majority of production, it would suffice to design a beautiful staircase once and duplicate that. You only need to look at the present offering to see that all solutions are nearly similar. In my opinion, we shouldn't use resources to that but focus on special quality, digging up those points where we could provide most value to the customer. [...] That would lead to standardisation but with individual outcomes.*



The realisation of new concepts and product ideas seems to depend critically on project managers in charge of housing projects. According to developers they tend to resist novelties from above, emphasising practical viability over innovation and sticking to “what they believe in, what they can, and also what they have done before”. Company X used to have a Nordic product development unit that envisioned new housing concepts. Because of problems in acceptance of centrally imposed (too avant-garde) concepts in the project level, product development activities were relocated closer to actual housing projects. There now are national product development teams that collaborate more closely with technical development. Considerable amount of product development also takes place in projects. This reflects the importance of tangible real-life cases as a breeding ground for innovation in housing.

To be able to make a difference, conceptual and strategic product development needs to be integrated with real-life projects. Currently, good design solutions, practices and other product or process enhancements born more or less haphazardly in individual housing projects realised by temporary project teams do not easily transfer to subsequent projects, let alone cumulate into organisational learning. The expertise of project managers also seems to be disconnected from strategic product development. On the other hand, strong project control hinders the diffusion of new practices, concepts and solutions developed centrally. Local, one-off nature of building and the professionals’ inherent preference for change and variety thus work against the central directives of streamlining and duplicability of production. Standardisation is seen as effective way to transfer best practices and successful design features across project boundaries. Overcoming the chasm between singularity and duplication is an important concern of developers:

*The problem is not that we wouldn't make good things but that we don't remember to duplicate them, being so excited about doing something new again. [...] When you are going to build it anyway, you might as well make it slightly different this time. [...] I'd claim that in over half of the cases it's just about the project managers' need to express themselves rather than any real need to change things [laughs]. [...] It's much about people's unwillingness to repeat something that they have already done.*

*What we can do is introduce smaller [subsolutions like] smart home solutions that are packaged so that the next project manager will see how it was realised, who were*

*the partners, what was the system and the interface. So you don't have to give it too much thought, it's there ready. Or if we have a loft project that has sold well, we can say, 'these things were essential and these not, copy it'. Or if we are building in more rural locations we can say, 'this was a good and functional [design of] four floors and 30 flats, what's the size of your plot, let's make it one floor higher or expand it a bit'.*

Regarding trends in the field and new solutions that there is anticipated to be demand for, the participants were quite unanimous. *Affordable housing* came up as a pressing dilemma that the industry is trying to develop solutions to from its own premises. The area was seen as highly interesting but problematic as business and hindered by inflexible regulation. Cheap land, simplification of dwelling space and equipment, modular building systems and prefabrication were mentioned as prerequisites of affordable production. BoKlok is example of this type of products as are the unfinished flats that the companies are selling in Eastern Europe.

Request for new forms of *collective urban housing* e.g. by seniors is another trend recognised by the participants. This was seen as relatively marginal topic with little business interest for developers. Adding *services* to dwelling was identified as a third area with increasing demand but lack of actors and viable business models. Services could be care services (for seniors) or services related to dwelling such as cleaning or renovation services. Finally, *sustainability* of housing was not seen as way to differentiate in the market or as something that customers would particularly demand but as profound technological transition in the field that all producers are forced to comply with. It was noted that apart from changes directly imposed by law, the industry has not been very innovative in this area. This is partly because enhancement of technology makes the end product more expensive.

#### 4.4.5

#### ARCHITECTURAL DESIGN AND NEW DESIGN TASKS

The developers use a large amount of architectural offices, some more frequently than others. The choice is rather random and the quality of design varies according to project. There is, however, a tendency towards identification of a few preferred architects with whom to establish longer-term partnerships. This is seen as a means to gain competitive advantage and to help managing the ongoing transition of the construction field

to comply with tightening environmental demands. The choice of architect is considered one of the key factors contributing to sustainability of housing. The developers control architectural design by means of *design brief*, *design guidelines*, and *quality control*. The design brief is given by the project manager and typically includes specification of target group, project size, house type and quality level. The companies may also have their own generic design guidelines that specify certain aspects of architecture. In the quality control phase, plans delivered by architects are assessed against economic, technical, functional and other requirements. Realisation of the initial objectives depends greatly on architects' skills in interpreting the design brief.

*We try to give architects the same information [that the development team has], depending on the briefing skills of the project managers. They are given the target group analysis and the segment description as well as information about what kind of people we are thinking about, the price level, type, and so forth. Architects then listen and understand variably well. I have to say that architects usually are quite good in designing houses but bloody bad in designing homes. They put all the energy to sketching the house and some summer apprentice divides it into flats. Sometimes the floor plans we get are just horrible.*

As seen here, architects are criticised for focusing on the exterior of buildings and those details that have little significance to residents, whereas the quality of apartment design is deemed mediocre. A lot of emphasis in the quality control phase is put to evaluating floor plans. Shortcomings in functionality and optimisation of space as well as in the design of kitchens and bathrooms were mentioned as typical problems. Despite recognition of these issues it seems that unsatisfactory design quality often just passes through. One should keep in mind that this is the developers' side of the story. Architects probably would argue that tight budgets and the industry's preference for conventionality force them to compromised designs. In any case, architectural design seems not to play a major value adding, differentiating or transformative role in the mainstream commercial housing production, apart from a few exceptions. It was implicated that one reason for this is the mundaneness of popular taste (cf. Östman 2005):

*Even the most enlightened architect can't change the existing cultural atmosphere. If we would have a highly sophisticated public who would understand [avant-garde]*

*architecture, we would make houses that look different. In Estonia, for instance, housing architecture is much more ambitious. [...] The same construction companies are active there but the customer demand and general culture are different. Everyone sees new architecture in the same [appreciative] way, which I don't think is the case in Finland. But despite that, one should always aspire the highest possible architectural quality. It's always been so that the general public hasn't cared much for new architecture.*

One major challenge for architects is the reconciliation of uniqueness and seriality of designs. Developers are looking for ways to duplicate successful design solutions (such as well-proven spatial configurations) and to use standardised modular elements (such as prefabricated bathroom elements), while the architectural design process still mostly relies on creation of unique artefacts. Paradoxically, however, the uniqueness of housing projects does not seem to guarantee the diversity of designs. Countless one-off projects still largely replicate the same architectural patterns. One may contemplate whether better utilisation of standard designs on the building and systems level could free designers' resources to attend those differentiating features of dwelling that are truly valuable to users. A Swedish study on centralisation of design in the housing industry (Sohlenius 2006) attests that local adaptation of housing projects is harder today because of central control and proposes that only "objective" qualities of products should be standardised, whereas more subjective ones should be left open in the centrally controlled product development process.

Two of the companies had recently hired a design manager (interior architect) who is responsible for the specification and management of the interior design assortment. The development teams also occupy themselves with developing standard design guidelines for architects considering dwelling design. These kind of designer roles are relatively new in the industry. Another trend is increasing employment of architects to development teams where they are involved in more central and strategic level design and decision-making alongside businesspeople and technical developers. These changes not only indicate growing importance of design in strategic differentiation of housing but also show the expansion of design activity away from singular buildings and its centralisation. Two distinct types of product development that focus on different parts of the dwelling product meet in housing production: technical product development led by engineers that concentrates on technical

enhancement of buildings and industrialisation of the building process, aiming at standardisation, and residential product development often led by architects that aims at attractiveness and variety of products in the eyes of consumers. The latter concentrates on product differentiation in respect to the market and those product specifications that are visible to consumers, such as interior design assortments and other choices offered to customers. Both types of product development operate on a level beyond singular housing projects, feeding the architectural design in projects.

#### 4.4.6

#### THREE PHASES OF EMERGENCE OF THE DWELLING PRODUCT

Based on the interviews and literature, three phases that also constitute distinctive realms of design activity can be recognised in the residential value creation process (see Table 3). Each has different agents in control and emphasises different aspects of design. There are breaks between the phases that are discussed in the next subchapter. *Housing development* forms a centrally controlled realm where residential product development teams exercise strategic and conceptual level design activities in close connection with technical product development, aiming at the creation of new products and subsolutions that can be duplicated across production. Designers here deal with creating new housing concepts, general design guidelines, the design of interior furnishings assortments, and service design. Standardisation and modularisation of designs and streamlining of the building process are also in focus here. The dwelling product in this stage can be speculative and partly abstract. Knowledge about users in housing development is typically general market knowledge. Compared with Keinonen's (2009) model, this phase displays characteristics of remote design.

*Housing projects* are where generic concepts and strategic design objectives are given concrete form in singular geographic locations. Project teams contracting architectural design here concentrate on the specification and manufacturing of dwellings as physical artefacts. The architect's task is to creatively interpret the design brief within given constraints so that its objectives are satisfactorily realised in the specific context, preferably so that architectural value is added. Designers in this phase deal with practical integration of various subsystems, products and components into a coherent whole. Architectural design in housing projects can be paralleled with traditional product design. Some knowledge

about specific customers or at least the local target group is typically available in this phase.

*Use of housing* is the third, currently less emphasised phase in the becoming of dwelling as product. After the residents move in, the outcome of the technical-economic production system turns into a lived-in *oeuvre* that is appropriated by users to their own purposes during its entire life cycle. Design activity in the use phase deals with modification of existing environments and can be professional or non-professional. In this kind of immediate design, actual individual users are present and in control. Interest shifts to in-depth contextual knowledge about individual users and user communities. Expansion of design activity in the field of housing towards this direction is demonstrated by recent collaborative and user-initiated housing projects, and by the growing interest among companies to develop services for the use phase of housing that was indicated in my interviews. Companies during the use phase can have a role in management, upkeep and renovation of buildings. They can also seek to tap into ideas and innovations growing out of the everyday experiences of users and utilise those in the industrial product development process.

My data suggests that housing just like many other branches of industry is witnessing the stratification of the design object and the expansion of design activity away from product design both upstream and downstream that has been detected by design researchers (Falin 2011, Findeli & Bousbaci 2005, Keinonen 2009). The commodification of housing, transition to flexible manufacturing, and the demand for sustainability are giving rise to large-scale systemic and strategic design problems. On the other hand, diversifying customer demand is forcing builders to turn closer towards the users and everyday living. Architectural design increasingly has to negotiate between these two other design realms. Ideally, designers and developers are able to draw on all three.

#### 4 . 4 . 7

#### BOTTLENECKS OF DIVERSIFICATION IN HOUSING PRODUCTION

As a conclusion of this section of the study, I shall present seven bottlenecks in the residential development process that hinder diversification of the offering and realisation of user-centredness in market-oriented housing production (see Figure 29). They came up in the company interviews and reflect the developer's professional experience. The bottlenecks for



their part complement the barriers of diversification in the Finnish housing delivery system identified by previous research (Krokfors 2010).

THE REGULATION BOTTLENECK:  
WHAT IS ALLOWED BY THE SYSTEM?

The developers frequently mentioned that laws, regulations and local building codes block diversification and prohibit significant differentiation of products. The participants wished for more flexible regulation that would allow alternative definitions of the dwelling product. For instance, it is not possible in Finland to sell flats in different stages of completion. Other specific hindrances that came up were the rule about average apartment size in Helsinki, which diminishes the production of small flats, and the requirement to build a certain number of parking slots in each housing project. The tradition among builders to complain about overregulation has been noted by many scholars (Habraken 2000, Brand 1994, Shove 1999). Habraken points out that exhaustive codification and shared design conventions are essential to make the professionally fragmented building process work. Brand sees building codes as manifestation of social learning that embody common sense acquired from generations of recurrent problems. It nevertheless seems that relaxation of some building regulations could encourage developers to increase the diversity of production. As illustrated by the Neo-loft case, getting innovations through in the system presently requires a lot of bargaining with authorities. On the other hand, rigid regulation provides a convenient justification for not undertaking innovation efforts.

THE USER AGENCY BOTTLENECK:  
HOW ARE USERS REPRESENTED  
IN THE PROCESS?

A second bottleneck concerns the agency of users in the development process. How the users of housing are conceived by housing professionals, how actual users are represented in the process, and whether they are given design control are central issues concerning the realisation of user-centredness in housing. As seen, users in the mainstream market-oriented urban housing production are merely present as customers. The extent of their control, apart from choosing a flat in the first hand, is mostly limited to making choices among pre-designed options on surface levels of the dwelling product. Developing user-initiated housing projects requires a lot of time and resources, and developers do not see a profitable role for themselves in such production. Including users in design



disturbs the established processes of builders. It is more convenient to address them merely in marketing. The housing industry has not been good in utilising any collaborative design methods, let alone methods like lead user innovation where some design tasks are outsourced to users. Profound mass customisation or co-configuration have not been realised in the field. The industry lacks channels, methods and tools for combining users to housing production in a mutually valuable way.

THE INNOVATION BOTTLENECK:  
HOW TO BREED TRANSFORMATIVE  
PRODUCT IDEAS AND  
INITIATE CHANGE?

The developers felt that the general climate in the Finnish housing field does not support innovation and that the industry lacks both innovative capacity and courage. Expensiveness of construction and extensive legal responsibilities make companies reluctant to take the risk of trying out something new. Established ways of doing things within the technology-dominated, professionally fragmented production system are difficult to change. On the other hand, the market is seen as so small and people's housing preferences so homogeneous that the potential for meaningful change is limited. Innovation in housing has largely been regarded as technological product and process enhancement, driven by objectives like standardisation and sustainability. Ground-breaking transformative innovations are scarce even in this area. Producers seem to just follow the minimum standard defined by law and competitors. The housing concepts show examples of more user-oriented innovation efforts instigated by the diversification of demand. Ideas for the concepts have come from many sources, often outside of the companies. One can say that the innovation ecosystem in housing is underdeveloped. A key question here is how newly emerging conceptual and strategic design activity is organised.

THE VALUE NETWORK BOTTLENECK:  
HOW TO FIND GOOD PARTNERS  
AND MANAGE COLLABORATIVE  
PRODUCT DEVELOPMENT EFFORTS?

The participants stressed the importance of collaboration with other companies and organisations when developing new solutions. Constantly changing project partners in housing production can hinder the development of new products and sharing of best practices. The developers felt that there is a general trend in the industry towards building longer-lasting partnerships and that well-chosen partners can provide

significant competitive edge. The companies are seeking to identify right competencies to complement their own and to make deals with other companies where both parties can benefit from each other. The value network can include service providers, technology providers, furniture manufacturers and other actors in or outside the construction field. Standardisation and packaging of common offerings enables their duplication in many projects. Added value can be sought from different ends of the network depending on the project. As an example, Company X has built a sustainable pilot house together with an energy company and a home technology provider where “green smart” solutions are tested. Company Y is seeking synergy from building regular apartment houses next to senior houses built by another developer. A service component in this way is made available for the residents of the regular house. Partnerships were also seen as a key requirement in concept development:

*Development of new concepts absolutely requires a cooperation network. There needs to be a shared understanding about doing this thing together. The whole idea of concept as means to increase competitiveness is lost if a partner is doing exactly the same with others. It requires a shared strategic intent and commitment. Joint development efforts. [...] It's important for us to have partners who are ready to join, get the idea of the concept and know how to realise it. And usually there are several partners whose components need to be matched. Willingness to innovate and try out new things is also crucial.*

The person added that in reality, because of scarcity of buildable land, the landowner often tends to dictate what is developed. A major challenge in new concept development according to my interviewees is aligning the product development processes of several companies along a common goal and integrating the parts provided by them. Strategic level collaborative product development among large value networks requires time and special skills. Powerful concept ideas were seen as one tool that can facilitate multi-partner product development. Problems in building common offerings have made the developers realise the importance for each company to develop their own standard “sub-concepts” or product or service modules that should be compatible with those of the partners and ready for them to use. The participants also wished for better and earlier collaboration with city planners. The urban plan was seen as major factor impacting the sustainability and cost-efficiency of building. One participant argued that much resources now go to fulfilling

such requirements in plans that have little to do with the attractiveness of the realised products to customers. Important here is to know when and how to collaborate and with whom. Co-design in the urban scale requires matching between the slow, democratic processes of planning and the faster, market and profit driven processes of developers.

THE REALISATION BOTTLENECK:  
HOW TO GET A PILOT PROJECT  
BUILT AND ENSURE THAT IT MEETS  
THE INITIAL OBJECTIVES?

There seems to be a gap between central residential product development and singular housing projects that easily kills new ideas coming from both directions. To get a new concept implemented requires a decision to start a real housing project based on it. The role of pilot projects is crucial in the diversification of housing production. In the case of housing, large and costly one-off artefacts, it is not possible to test new designs in the real world with the help of prototypes or “beta versions”. Slowness and expensiveness of building are an efficient barrier to testing new things. In order to move from the conceptual realm to production, new ideas need to be “sold” by strategic level product developers to business directors and project managers. As shown by Sohlenius (2006) and indicated in my interviews, there often are fundamental differences between the attitudes of the parties. The architect is one more agent that needs to be convinced of the benefits of a concept. From the side of the product development team, the situation looks like this:

*We must have a product description of the new concept and then push it through here internally – that this is our product and it always fulfils these requirements, that's the first thing. It's very much between the ears how the idea is adopted. Every project manager should understand [the concept] and ensure the functioning of the product on its basis. [A concept] passes through with the help of instructions and supervision.*

The realisation bottleneck not only concerns the take-off of novelty but how the good intentions of product developers and the project team are realised as physical product attributes. The individual skills of architects in translating generic product descriptions into specific design features play an important role here. It was noted by my informants that radical design ideas tend to dilute during the process. If not turned down already by regulators and planners, they are

repressed by business objectives. During the implementation process, project teams are faced with the housing regime's systemic resistance for making something new. Producers of innovative pilot projects often meet unexpected technical and regulatory problems that threaten to compromise the concept, the solving of which can be time-consuming and expensive. Many things have to be done the hard way when new housing solutions are piloted.

THE ADOPTION BOTTLENECK:  
WILL USERS FIND AND  
VALUE THE OUTCOME?

Next bottleneck in the process relates to the adoption of new products by users. In order to be successful, they need to be approved by users both in the form of quantifiable market response (sales) and through satisfaction to the product attributes during use. The latter aspect was not so much discussed by my interviewees. A key question to them is how customers find the new product in the market. The developers emphasised that customer demand for new housing solutions is often latent. If people do not know that a certain kind of solution exists or is possible to be realised, they do not know to desire or demand for it. Exemplary pilot projects have a crucial role in creating awareness of novelties and expanding people's expectations of the attainable. The interest risen by the pilot project, realised as sales, gives the builder indication whether to continue duplicating the product. Unpredictability of local demand and obscurity of real users make it hard to foretell the success of a new concept. Even if a target group would be recognised, it is difficult to direct marketing directly at them. Market analysis and general consumer insight are basically the only ways for making predictions about attractiveness of products before pre-sales. The developers try to recognise emerging new demand by following the housing field and public discussion. Advertisement and media publicity greatly influence the creation of demand. The success of a novelty requires the conjunction also of other benefits to consumers than those related to core concept of the product, such as location and price.

*Regarding new styles and models of living, the group who wants a novelty in the beginning is small. If you build a houseful of something new it can be left in your hands. [...] Because of that, [the development of new products] is more like this gradual proceeding and offering of possibilities, sort of passive marketing that makes people to start looking for let's say loft apartments. When those became*

*available the demand was high, largely because their price was so affordable. Then people noticed that they have other benefits as well.*

THE DIFFUSION BOTTLENECK:  
HOW TO MAKE IT AGAIN,  
AND BETTER?

Finally, overcoming the gap between a singular pilot project and a duplicable product in the market seems to be a major challenge for new housing concepts. The deeper into the hierarchy of built environment the concept extends, the more difficult it seems to be to replicate it in new locations. Offering alternative interior fit-out options in dwellings merely depends on a decision by the builder, whereas the duplication of a concept like Loppukiri might require engaging a new group of enthusiastic user-developers and collaboration with planners. Innovative pilot projects get a lot of development resources in companies and media attention. They are often publicly subsidised in the form of a plot or funding, which subsequent spin-offs necessarily aren't. Integrating a novel solution as part of regular production may necessitate some stripping down of its original features, as seen in PlusKoti. Localness of housing production and building regulations easily become a barrier to diffusion especially in the case of highly industrialised concepts. Challenges in localisation were one reason for the initial failure of the BoKlok concept:

*One problem was that every municipality in Finland has slightly different requirements and regulations, which made it difficult to stick to the concept. You could not industrialise and standardise the building process because every municipality demanded little changes to the design of this wall or that roof. That eroded the efficiency of the process so that the price proposition could not be what it should have been for the concept to work.*

As shown by my cases, there are many sources from which new housing concepts can come from. The realms of housing development, housing projects, and use of housing each can act as breeding ground for product ideas. Corporation level concept design and technical innovation; successful designs, good practices and synergetic partnerships born unexpectedly in individual housing projects; and collaboration with users all can provide seeds for viable new dwelling products. However, the cumbersomeness and riskiness of the first project often discourages stakeholders from undertaking duplications. Technical problems and resultant bad publicity in the Neo-

loft case led to failure of the concept in taking off. The chasm between one-off pilot projects and mainstream production according to my material hinders the diffusion of novelties in housing. As crystallised by one participant,

*What annoys me is that even if many concepts with slight differences are being developed in Finland, they often tend to be a bit like single-use concepts ['kertakäyttökonsepteja']. You don't get the right picture about whether this would be the thing that would really take off. Maybe there's too little courage in the field. We go quickly back to the old at the smallest setback.*



**5**  
**USER**  
**PERSPE**

**THE EXPE**  
**DWELLING**



**CTIVE**

**RIENCED**

IN THE PREVIOUS section we saw how the dwelling products in the market are constructed as differentiated bundles of benefits that operate across the hierarchic levels of built form, constituting heterogeneous composites of designable elements. In this section, I will further define and expand the understanding of dwelling as a product and object of design from the perspective of users. The section is grounded on a series of user studies conducted with 44 persons about their dwelling, their living environment, and their everyday experience of living. The aim is to provide empirical knowledge about people's relationship with the dwelling product and to open up some key problematics of user-centred design in the case of housing. I will begin by discussing the relationship of user and the designable dwelling product: how an idea of user is constructed into the dwelling product and what kind of connections there are between individual users and the designable features of dwelling (Chapter 5.1). The interviews of residents representing six different user groups as my empirical material (see Chapter 5.2), I will then examine how dwelling as product is defined in everyday living (Chapter 5.3) and how users interact with their dwelling to appropriate it to their needs, preferences and values (Chapter 5.4).

## 5.1

## Relationship between users and the dwelling product

## 5.1.1

### EVERYDAY EXPERIENCE OF DWELLING AND THE QUEST FOR CONGRUENCE

In this study, dwelling is approached as a *used* artefact to which its user has an intimate, long-lasting relationship. We settle into a dwelling and make it ours. Dwelling not only provides shelter and basic facilities to enable survival but conveys information about social status and ownership to others. It gives us comfort, privacy and independence. The act of dwelling means control by resident over physical elements on various hierarchical levels of the built environment (Habraken 2000). At the same time, the dwelling controls its user as “[t]he location, shape, and form of our homes impinge directly on the smallest details of our daily life” (Shove 1999, 130). Dwellings are delivered by an intricate professional system that embodies historically evolved socio-technical knowing.

We experience our dwelling holistically, with all senses, as synchronised by daily rhythms and in seamless connection to broader built, social and natural context. The mentally constructed “lived space” of dwelling is fundamentally different from the measurable perceived space and from the abstract space conceived by designers and scientists (Lefebvre 1991). The relationship between a dwelling and its user is reciprocal. Meaningful lived space is created in daily encounters of people and the material environment. A dwelling becomes a home by attachment of meanings to it and by repetitive activities making use of it. Through its experienced and designable properties, a dwelling both communicates appropriate behaviour to user and accommodates user’s behaviour. The design of dwelling can bring about, support or discourage certain behaviour. (Saarikangas 2002.) Psychologists define inhabitation as “motivated person-environment transaction, where the material environment is emotionally effective and becomes emotionally significant through manipulation (behavior and use over time)” (Kaiser & Fuhrer 1996). The emotional significance of dwelling attributes changes from person to person. The same environment can be experienced or used differently depending on meanings attached to it. What is aspired in inhabitation is *congruence*: a satisfactory match between own emotional needs and the perceived emotional

significance of the environment (ibid.). The experienced quality of dwelling is formed in interaction between the “ideal world” of dreams and desires, and the “real world” of perceived opportunities in the environment (Kyttä & Kahila 2006).

Also the production and consumption of housing are co-dependent and condition each other. Producers adjust their offering to (supposed) consumer demand and consumers align their goals and expectations along what they know that exists. The strategies of producers and consumers in the experience market correspond with each other (Schulze 2005, see Chapter 1.3). Despite criticism on the qualitative uniformity of housing production, people’s housing desires and the offering of housing as a whole to a large degree mirror each other. It is rather the unattainability of desired solutions due to economic and other constraints that poses a problem to individual users. Housing purchase is a point where public, corporate and domestic decision-making intersect, and sometimes clash with each other (Shove 1999). Purchase decisions are influenced by both rational and emotional factors and guided by opportunities and constraints. Buyers in the market need to make their preferences explicit, weigh them against the attributes of available products, and in most cases prepare for compromises and trade-offs.

In reflection to the evolutionary analogy, one can state that the consumption and use as well as the production of housing are characterised by *satisficing* rather than optimisation. In human systems like housing there is not a universal measure of “fitness” that products can be optimised to. The value of a specific dwelling to its user is individually defined. Theories about user value in product design connect value with the holistic user experience of a product: “Since products enable an experience for the user, the better the experience, the greater value of the product to the consumer” (Shove et al. 2005, 16, citing Cagan and Vogel). Shove et al. (ibid., 18) discuss different perceptions of user value. Value can be understood as the extent to which objects fulfil pre-existing symbolic and functional requirements of users. Another way to see user value is that interpretations of value are mobile, contextual and not inscribed in objects themselves. A third view, most relevant for this study, is that material artefacts themselves configure the needs and practices of those who use them and thus have an essential role in value creation. Design researcher Suzan Boztepe (2007) distinguishes between exchange and use value, sign value, and experience value in everyday living. She states that user value is created as a result of the combination of product properties and what users and their local contexts bring to the interaction with

the product. Categories of user value that the designable elements of dwelling contribute to in everyday experiences according to Boztepe include utility value (convenience, quality and performance, economy), social significance value (social prestige, identity), emotional value (pleasure, sentimentality), and spiritual value.

French sociologist Michel de Certeau (1984, 34–39; see also Saarikangas 2002, 31 and Juntto 1990, 35) famously distinguishes between normative *strategies* of production and everyday *tactics* of use and consumption. Strategies pursued by those in power define and rule places, whereas tactics are situational ways of making use of the given places in time. Dwellings are designed and produced on the level of strategy and used on the level of tactics. Everyday practices and ways of operating in the domestic environment are tactical by nature. De Certeau maintains that the users of space are derived of strategic power. Bound by the strategies of authorities and producers, only tactical moves are available to them that cannot profoundly impact the material circumstances. On the other hand, tactics in everyday environment are what create the lived space, taking advantage of its opportunities and cleverly playing with the constraints. Collaborative design can endow people with strategic power. The people who initiated the Loppukiri house, for instance, clearly were acting on the level of strategy. In continuation, I will use the word strategy of users' actions upon the dwelling product that result in valuable change, even if some of the actions seen in a broader context are merely tactical.

Users' strategies are also emphasised by Estonian housing researcher Katrin Paadam (2003) who maintains that the social construction of residence happens by joint effect of everyday *experiences*, the residents' cultural, social and economic *capacities*, and *dispositions*, i.e. various individual strategies in the residence and during housing career (cf. Bourdieu 1984). She argues that rather than diversity of design solutions, the problem regarding user-centredness of housing is how different residents relate to their residence and in what ways their strategies interact with institutional strategies such as urban design and housing policies. Various theories aside, it seems evident that to understand the mutually definitive relationship between users and the dwelling product and the specific problems related to user-centredness in industrial urban housing, one must look at users and dwellings together. The next two subchapters discuss how the user is defined by the housing system and inscribed into the dwelling product, and how users themselves actively redefine and appropriate the dwelling product for their own purposes, sometimes counteracting the system.

The concept of the user is a quintessentially modern invention. In traditional societies where design, making and use of dwellings was intertwined and where the future occupant most often was personally known and participating in the process, there was no need for such a concept. It was the professionalisation and industrialisation of building, the separation of design as independent activity, and the emergence of a housing market that necessitated anonymisation and abstraction of the user. To Lefebvre (interpreted by Forty 2013, 312), the concept of the user was “[...] a particular device by which modern societies, having deprived their members of the lived experience of space (by turning it into a mental abstraction) achieved the further irony of making the inhabitants of that space unable even to recognize themselves within it, by turning them into abstractions too”.

Viewed critically, the idea of user can be seen as the capitalist system’s way to dominate people by forcing them into narrow, predetermined roles. In this dissertation, I use the notion in a more positive meaning. To me, it connects to user-centred design research and emphasises the relationship between individual persons and the dwelling as artefact. As noted by Hill (*ibid.*), the term user suggests positive action and the potential also for misuse. Saarikangas (2002) defines user as a general term for describing the occupants of dwellings that renders them as active agents and enables analysis of the use of space. An implicit, conceptual user according to her is necessarily presupposed in dwellings.

How architects conceive the user affects what they design and the relationship between the user and the architect (Hill 2003). Historical changes in conceiving the user of housing were discussed in Chapter 4.2.1. Adrian Forty (2013, 312–315) notes how the term user has served different purposes in the history of architectural discourse. He connects the term to the birth of the welfare state, when it was adopted in an abstract and general meaning for referring to the occupants of buildings. The term at that time held strong connotations to the disadvantaged and disempowered, legitimating the architects’ belief that their designs were done for “people”, when in fact their clients were state institutions. Along the participatory design movement, a (fantastically) positive and emancipatory meaning of user emerged. Individual users were now seen as active agents who could provide valuable input to architecture. As the welfare state weakened and the limits of democracy in

design became evident, the user began increasingly to be seen as a nuisance and threat to the architect's intentions. In recent times, according to Forty, talking about the user has become a *means for architects to criticise their own practice*.

Despite the individualisation process, the implicit definition of user in industrial housing remains to be tied to modern functionalism. Functionalism introduced to housing the principle of functional specificity – that “form should precisely accommodate inhabitation in a tightly engineered and optimized fit”, and be moulded by a *programme* that precedes design (Habraken 2000, 134). This eliminated the possibility of multifunctionality and blocked mutual self-definition of form and use. Functionalism assumed a universal, obedient user who “[...] learns to operate a space the way the technician learns to operate a machine – the correct way” (Hill 2003, 17). Specific ways to undermine the user in architecture according to Hill include reduction of user to measurable actions, architecture directing the user, and contemplation of architecture as work of art undisturbed by the presence of the user. Hill (*ibid.*, 12–13) points out how the Fordist ideas of prototype, production line and scientific management of labour are evident in functionalist housing<sup>23</sup> and how each has a distinct relationship with the user:

*One purpose of a prototype is to gauge potential users' enthusiasm for a product, which may be modified according to their response. The user is absent from a production line but appears at the end of the construction process as a consumer. In the scientific management of labour, the user is a subject of analysis.*

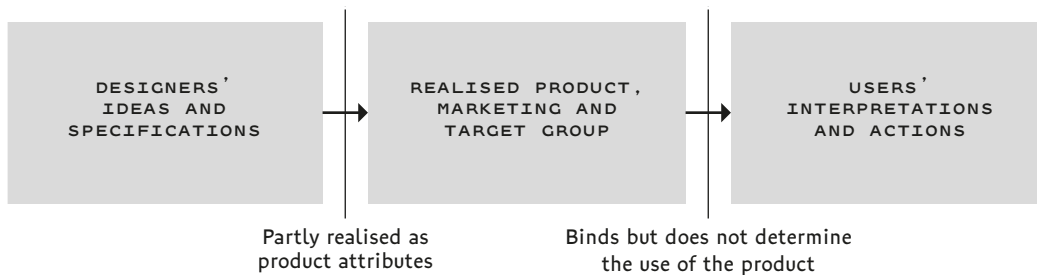
Along the lines of Akrich (1992), we can see how a definition of user is constructed into housing by the production system. The characteristics and behaviour of the user are configured by the designer, and the user is disciplined by the technology. A projection of user is inscribed into the physical dwelling product along its evolution. In modern mass produced housing, the relationship between the dwelling product and user is locked. Users are seen as homogeneous and passive and are in most cases given only superficial control over the dwelling product. It also seems that the understanding of user within the housing system is *fragmented*. Various professions each have their own angle to and understanding of the user. Consequently, multiple and sometimes contrasting inscriptions of user can be present in the components of the experienced dwelling product. Systemic fragmentation of the user is one reason that makes user-centredness in industrial

23 .

Hill's examples are the *Weissenhofsiedlung* (1927) as a prototype of modern housing area, the Dessau-Törten housing estate (1928) that pioneered a serial construction method, and the Frankfurt kitchen (1926), the forerunner of a modern standard kitchen.

housing complicated. Enhancing the user experience of one component of the dwelling product can only have limited effect to the holistic experience of dwelling. Moreover, the relationship between user and the design of dwelling in industrial production is not direct but *mediated* through powerful structures by which the housing system produces the user (see Figure 32). Some of these are discussed below. There are discontinuities in the process, which mean that design decisions only partially come to determine use (see Figure 30). As noted by Steadman (2008, 230), the relationship between built artefacts and their users is relational, which means that some features of dwellings are always beyond predictions:

*The particular meanings which attach to artefacts, the aims which they serve, the exact ways in which they are seen and evaluated aesthetically, hence to some extent people's behaviour in relation to them, are all products of the specific historical situations in which the objects or buildings are made and from which the observers or users come, and they are changed at every step by the new problems which those situations throw up and by the new and individual responses which those problems evoke.*



The user is becoming constructed into the dwelling product on many levels and scales. Culture, housing ideology and housing policy set the overall landscape for housing production. Laws, norms and standards as well as unwritten conventions and practices within the housing regime regulate the outcomes. Housing designs are grounded on historically accumulated images, archetypes, models, types, and dominant designs. They embody styles and aesthetic schemata. There is engrained in each of these structures an understanding or definition of user that becomes mediated to the end product and is detectable in its designed features.

*Tacit experiential knowing* plays an important role in the mediation between users and the dwelling product.

FIGURE 30.  
The relationship  
between the design  
and use of a product  
(Hyysalo 2009, 144).



All of us, including housing professionals, have our own experience of dwelling. Unlike with many other industrial products, both designers and laypeople are deeply familiar with the meaning and functions of dwelling. This ensures that regardless of the level of user involvement, architects are able to design dwellings that respond to the majority of the residents' needs relatively well. Here they draw on their own experiences and on shared professional and cultural knowledge. On the other hand, the familiarity of dwelling can make designers to design for "themselves" instead of truly seeking to understand other, different users.

The role of tacit knowing arising from use and local contexts is threatened in late-modern housing. Habraken (2000, 292–293) argues that the variety of building types developed by international networks is limited in comparison to those emerging locally. Variations of housing born in small markets where the relationship between builders and users is close correspond well with local preferences and lifestyles. The mass produced public housing types by contrast are purely professional products from the development of which local users have been excluded. Commercial mass-market housing architecture as put by Brand (1994, 141) is guided by a "standard homogenized pool of building lore which is no longer regional and often not even national, but world-encompassing, inescapable and unchallengeable".

*Norms and regulation* ensure the basic usability and technical viability of dwellings through extensive design codification. They transmit a quantified understanding of user, seen mainly as performer of functions. During the standardisation period, housing needs were translated into numbers. Price per square metre and room per person became the basis of production. The average begun to drive design. Norms based on the acceptable minimum still largely determine what is built. Juntto (1990, 337–338, 345) argues that norms are adopted by people and become the normality along which expectations are attuned. She also notes how the definition of normal creates the category of abnormal. Failure in following a "normal" housing career, for instance, has been punished by housing policy. The needs of "abnormal" people have been overlooked by the housing regime or accentuated in the form of "special housing" for groups like seniors or the disabled, thought to be homogeneous and defined by their "difference". Continuing Juntto's argument, one could claim that narrowing down of the dwelling product into a few "normal" designs has left out some needs and users, towards which the housing system, driven by the individualisation discourse and liberated by flexible production methods, now is turning.

*Previous designs* also act as channels between users and production. The basic types and forms of dwelling are socially shared by both professionals and laypeople. They constitute the overall framework for the variation of designs and steer users' expectations of the attainable. Innovations and fashions of housing from Finland and abroad trickle down the social ladder. Architects look up to leading avant-garde designs and interpret the features of them in their work. The media disseminates suggestive images of dwellings designed to perfection. Brand (1994, 132) emphasises informal pathways of influence that drive continuity between buildings via builders and users. For example, clients typically borrow ideas from what they have seen and suggest to architects. People observe other people's dwellings and learn from the dwellings that they experience during their housing career.

How user needs are realised in housing critically depends on *user knowledge*, *representations of users*, and *agency of users* in the housing delivery process. A key issue is how professionals conceive users and their needs. Juntto (1990, 16–17) notes that competing definitions of needs have coexisted in housing. Everybody can be thought to have the same needs, needs can be based on the average or the demand of many, or they can be left to the market to define. Whether it is policymakers, designers or producers who approach the users also influences how needs are defined. Users can be approached on the level of demographics or as individuals. Knowledge about users can be market knowledge, customer knowledge, or in-depth user knowledge. They can be conceived as human beings, citizens, local residents, members of a household, or individual personas. There are secondary users in dwellings such as visitors and service providers. Users can be classified on the basis of gender, income, education, profession, family type or life phase. Their identity, lifestyle, taste, needs, dreams and desires, preferences, housing choices or consumption patterns can be investigated. Measurement of preferences and needs can be compositional, measuring preference for each attribute of dwelling separately, or conjoint, measuring overall preference for a housing solution (Coolen 2008, 3). Further distinction has to be made between stated preference and one revealed by behaviour. Concerning the users' relationship with the dwelling product, aspects like meaning, value, cognition, affordances or user experience can be emphasised. Focus can be on certain types of users such as lead, crucial, lay or expert users. Interest can lie in the users' individual capacities, skills, strategies and tactics, or in the shared practices, activities and tasks of dwelling. Methods for eliciting information about users range from

measurement to surveys, interviews and ethnography. User studies can concentrate on different parts of dwelling, such as architecture, technology or outdoor areas.

The gap between social sciences and design has been noted by many design theorists (e.g. Buchanan 2001). A key challenge to design is how to transfer or translate the general insights of social scientists into specific product features. As discussed previously, studies on housing preferences and needs tend to produce rather predictable outcomes that are too general to make a difference to the design of housing. Housing research lacks connection to specific designable features of dwelling and often overlooks individual differences in experiencing them. On the other hand, researchers and designers may overemphasise the importance of novelty and the role of design in everyday living. They may also become seduced by the user-centred approach, believing that directly responding to user needs without the creative input of designers automatically leads to better solutions. There is lot of knowledge about the generic design criteria of good living environment but less about the systemic challenges of getting novel solutions through. The studies rarely take into consideration people's individual housing histories – the effect of past experiences and everyday interactions with the material environment to the way they perceive dwelling and make decisions about it. Users as active shapers of their environment are typically overlooked in housing research. One specific problem of surveys is that the respondents live in dwellings that are built in different periods. The results thus do not reliably reflect the quality of new production (Vainio 2008). It has been claimed that housing studies is dominated by market hegemony, overlooking the lived experience and local knowledge (Allen 2009). Klingmann (2007) notes that the emphasis on lifestyles in housing is essentially a middle class phenomenon. The developers in my interviews saw individuality the concern of a small urban upmarket customer segment.

There is considerable body of sociological research about lifestyles and social class and how they are expressed in housing consumption and the domestic interior. For example, Schulze (2005, 277–330, 384) presents five “taste milieus” in the German society that are characterised by different consumption preferences and everyday aesthetics. The milieus are partially determined by age and level of education (see Figure 33). The *high-level milieu* emphasises status and striving for position. Its typical representatives are middle-aged people with high education and conservative taste. They dwell comfortably and often have large property.

In the *harmony milieu*, security and cosiness are primary goals. This milieu is characterised by popular taste and avoidance of eccentricity. Its members are often middle-aged or older people with less education. They are home-centred but have lower living standard and home ownership rate. The *integration milieu* is driven by conformity to social expectations. Typical members are employees living in own house with high dwelling satisfaction. They seek harmony and perfection by mixing the aesthetics of high and popular culture. This milieu is close to Bourdieu's (1984) *petit-bourgeoisie*. In the *individualistic self-realisation milieu*, choices are motivated by fulfilment of personal goals and differentiation from others. Aesthetic perfection, variety and unconventionality are valued. People here could be described as the "creative class": urban, educated professionals. Finally, the *entertainment milieu* is characterised by spontaneous need satisfaction and sensory stimulation. This action-oriented milieu relies on tools (television, car) that provide external excitement and entertainment and connection to popular subcultures. It mostly comprises young people with less education. Most housing developers in Finland use consumer segmentation models based on similar classifications. As noted in Chapter 4.4, they are mainly utilised in product development and in marketing. On the level of the physical product, segmentation at least superficially influences the selection of house type, dwelling sizes, and interior design styles.

Various *stereotypical perceptions* of the user of housing can be read from literature, my data and the ways in which users are referred to in the housing field. "Consumer myths" in the housing industry (Rask et al. 2008) were discussed earlier. These probably influence the relationship between users and housing production although few studies on the subject exist. The "user stereotypes" listed below are to be taken as caricatures that reflect some implicit assumptions in the field. Real users are irreducible to such categorisations. The stereotypes are my interpretation based on discourses about users in the field.

- *Ideal, universal user* is the abstract and anonymous creation of modernity who looms behind the norms, standards and dominant designs of housing. He is constructed of numbers and predefined functions and is taken for granted. At best, he represents the shared human experience of dwelling in the design process relatively well, ensuring the suitability of designs for the majority. Because he does not really exist, anyone can define him as they like and use him to further their own goals.

- *Passive, conservative user* is how laypeople are typically seen by housing professionals. He is a member of the masses with supposedly known and homogeneous needs, considered incompetent, and driven by avoidance of risks and of anything unconventional. He is called forward whenever justification is needed for continuing the business as usual.
- *Reactive, malleable user* is assumed by many avant-garde architects as well as home technology providers counting on technology push. His actions can be directed and his experiences provoked by the designer. He is the user who gratefully admires architecture and technology, using them as intended and accommodating his daily life to their demands. He subsumes to the imagery of popular consumer culture, adopting the suggestive messages of producers.
- *Active, creative user* is the favourite of design researchers, participatory design activists and forward-looking business-people. He is fundamentally “good” – knowledgeable, inventive, resourceful, considerate towards other people and the environment, always willing to participate, capable of coming up with new solutions that challenge those of expert designers.
- *Individualistic, demanding user* is met by developers marketing their products in higher-end urban areas. He demands premium quality and high degree of personalisation. He is challenging the homogeneity of housing production but is allowed to do so because he pays well. He drives product differentiation in the housing industry and is at the centre of the discourse about differentiation of lifestyles.
- *Exceptional, extreme user* is not one of “us” but belongs to the category of “others”. He may have a marginal lifestyle that is manifested as unconventional housing preferences, have special needs or disabilities that are not easily met by regular production, or represent an ethnic or other minority. He may have been pushed or have stepped outside of the mainstream housing market. Developing solutions for him often involves public intervention.
- *Rebellious, dangerous user* is present in the populist complaints among landlords and building managers about “misuse” and neglect of dwellings. He ignores the norms of living, does not conform to rules, and does not know or care enough to use his dwelling the “correct” way. He is to be controlled and prevented from doing harm to property. He occasionally flashes in the speech of builders and property owners.

# KOTI ETSII IHMISTÄ



**Kiinteistön maailma**

MEITÄ KEHUTAAN RIPEIKSI

FIGURE 31.  
Who is the user of housing? Artist Irmeli Huhtala plays with assumptions of normality in the real estate market in her project “Koti etsii ihmistä” (“A home is seeking for a human”, 2007). Modified advertisement of a real estate agency chain shows a Roma family in traditional dress. Courtesy of the artist.

Agents within the housing regime employ different strategies for adjusting the products along the supposed needs and lifestyles of users. In this way, research, design, production and marketing of housing participate in the construction of user. Identification of user needs is an integral part of the generic industrial product development process (see Ulrich & Eppinger 2004, 54–55), where the aim is simply to translate customer needs to product specifications. This takes place after identification of a particular market opportunity and setting of broader constraints and objectives of the project, and is seen as straightforward data gathering and interpretation process. More advanced user-centred design methods were discussed in Chapter 3.2.

An example of a *research strategy* that attempts to overcome the gap between users and design is the means-end theory originating from marketing studies that links product features with values of consumers. It has been applied to housing (Coolen 2008) and the living environment (Arvola et al. 2010). The means-end approach sees the attributes of dwelling as functional for achieving people’s goals and values and seeks to reveal the individual meanings that they have

for residents. How people judge various attributes of dwelling provides information about their housing preferences and the contribution of specific designable features to realisation of users' values. Means-end chains are constructed by ladder interviews. They extend from physical product attributes to their experienced consequences and to abstract values that the consequences relate to. Variation in chains shows that an attribute can have different meaning to different users and that a value can be satisfied by different attributes. Example of a means-end chain is "five rooms – more space – privacy" (Coolen 2008, 6). The end of privacy in this case is met by means on the level of spatial organisation.

Architectural design determines use, even if use also depends on other circumstances. *Physical strategies* in the dwelling product for supporting an active role of user according to Hill (2003) include flexibility, polyvalence via generality or incompleteness of space, and "hedonistic" architecture aiming to produce a wealth of experiences. Form can also be designed to act against use. Artistic architecture sometimes plays with intentional user-unfriendliness or provocation of users. The incorporation of flexibility into buildings as a strategy seeks to defrost the relationship between use and form by making form absorb changes in use or adapt to them. At the same time, flexibility extends the designer's control of use into the future (Hill 2003, 31). Flexibility in a dwelling can be achieved by physical means (open building; movable or changeable parts), technology (ambient intelligence, responsive environments), spatial redundancy (excess space), or open plan (space with undetermined or multiple uses) (Ibid., 32).

Leupen (2006a) identifies alterability, extendability and polyvalence as types of spatial flexibility during use. A polyvalent dwelling allows individual interpretations by the user. Some elements can also be left to the user to complete. Brand (1994, 189) suggests designing dwellings so that they allow easy maintenance and repair by users, enabling the users to develop a "hands-on" relationship to their dwelling. Hill (2003, 36) argues that physical flexibility assumes a reactive user who performs predetermined moves suggested by form, whereas flexibility by technology suggests a more symbiotic relationship between dwelling and user. User-oriented adaptive environments have empowering capabilities. They can intuitively respond to users' practices and needs and bring about valuable transformations. Smart dwellings can at least in theory become active agents in their own that engage in a dialogue with users.



*Collaborative design* involves users more directly to housing design and production. The degree of user control during the design process can range from self-building to self-design, co-design with professionals, co-configuration, mass customisation, selecting among pre-designed options, or accepting a finished solution. Advanced production methods relying on modularity can utilise automated search tools and sophisticated design algorithms for compiling designs that match the user's profile (see Chapter 4.1.3). Participatory strategies can target different levels or parts of the dwelling product and focus on different phases in the delivery process. Users can be engaged to one-off design acts or to continuous transformative activity. Users can be represented in planning and design processes through democratic decision-making, interest groups, activists, or lead users. They can be initiators of a housing project as in group building or become involved only as clients of finalised products. They can develop solutions for themselves or also for the market. When the designers are also the users, designing, making and using merge into each other. Collaborative design involves the users deeply and creates commitment but can lead to over-specificity to needs of the immediate users, hindering the adaptivity of the end product to future changes and new users (Brand 1994, Hill 2003). It also seems that involvement of laypeople to design mostly leads to incremental improvement of existing products. User-builders usually rely on established solutions to avoid risks and have little means to invest in design (Östman 2005).

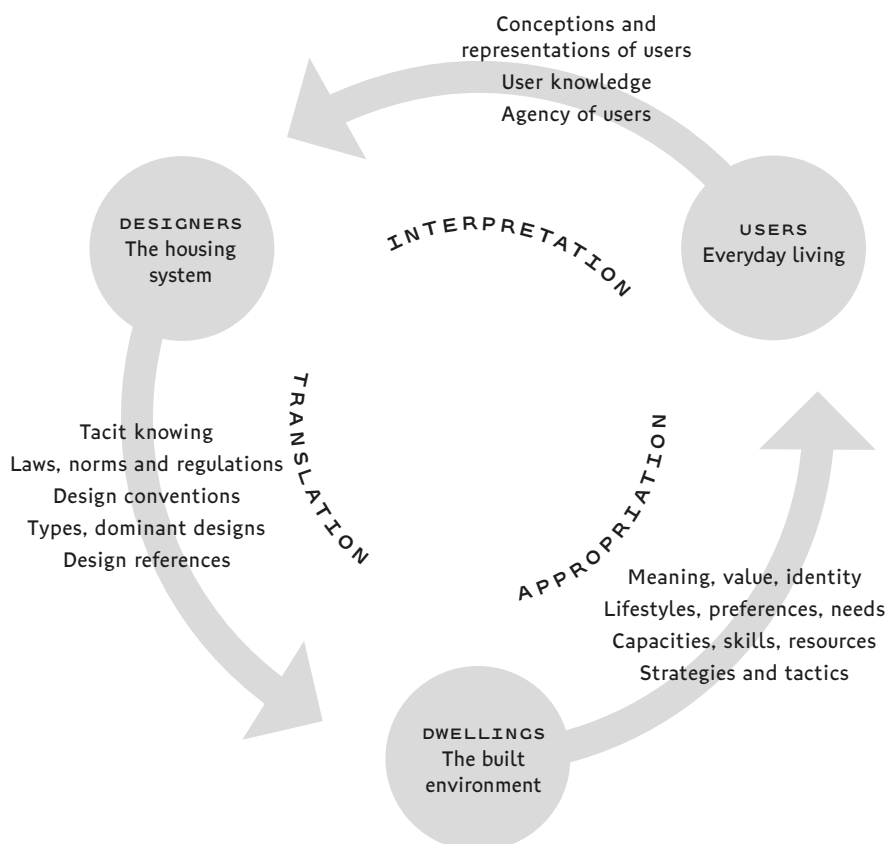
*The relationship between user and designer* is one factor that influences the user-centredness of design. Jääskö and Keinonen (2006, 110–115) identify several types of user-designer relationships where the roles of agents and closeness of interaction vary. A successful user-centred design according to them contains features of them all. The relationship of “engineer designer and component user” is evident in situations where design deals with fitting together of available components so that performance goals are met. The user here is one of the components, a generic human operator performing measurable tasks that need to be accounted for by design. The mode of “doctor designer and patient user” shifts focus to the interaction between a particular artefact and its user. Here, a designer looks at a user like a doctor at a patient. A user brings in a problem that is to be solved. In the case of “student designer and master user” designers are observing users in real life, trying to become familiar with their behaviour. Users are seen as experts that designers learn from. The roles of “coach designer and athlete user” are effective in participatory design where users are given an equal opportunity to influence



the design. Designers provide the users tools for dealing with design problems in a process facilitated by professionals. When designers turn to interesting users to get inspiration from them, the relationship becomes one of “artist designer and muse user”. “Chef designer and customer user” describes a situation where a designer concocts a solution for a user trusting his personal taste and experience. “Director designer and actor user” implies designers themselves creating the user by imagining potential future users of designs.

User-centred design does not necessarily require user participation. It is possible to create more user-centred and individual housing solutions solely relying on the expertise and creativity of designers and other professionals. Expanding the control of users in dwelling production has its fallacies. It can lead to unsustainable solutions that become the burden of subsequent generations. Instead of responding directly to every whim and desire of people, agents within the housing system should aim to develop responsible design-driven strategies that open up possibilities for unexpected transformations and user value breakthroughs in everyday living.

FIGURE 32. Mediating structures between users, designers and dwelling artefacts. The realisation of user needs in housing can be depicted as a cyclical process consisting of interpretation of users and their needs by designers, translation of the needs into product attributes, and appropriation of the finished products by users. The mediating structures act as filters in the process.



It is justified to argue that despite the powerful definitive strategies of the housing system, the actual construction of dwelling from the perspective of users happens through everyday living. User experiences take place in singular *used* dwellings and depend on individual ways of acting and giving meaning. Examination of the relationship between users and the dwelling product therefore needs to include the use phase: dwellings as continuously changing artefacts in the making of which their users have a crucial role.

*To use built form is to exercise some control, and to control is to transform. There is thus no absolute distinction between those who create and those who use. [...] For designers and planners, use is typically set a priori – immobilized – to allow optimized problem solving during programming and design. But in reality, use is neither static nor passive. (Habraken 2000, 7–8.)*

Users are only partially tied by the strategies of producers. They have active strategies and tactics of their own that aim to correct misfits and appropriate the dwelling product to their purposes. Importantly, their choice in the market is not limited to just new production. There usually is enough generational and individual difference within the local offering to make it much more diverse than new production. Individual modifications made to the dwelling stock by other users create further diversity. Despite financial and geographic constraints, many possibilities for achieving congruence and user value are available to people both before housing purchase and during use. They can usually with some effort modify the interior of their flat after purchase. They can choose to ignore or get used to non-optimal solutions. They can invent ways to overcome problems and use their dwelling in ways not foreseen by designers. People are free to discriminate and counteract the norms and forms imposed on them by the housing regime. Dwelling as private territory even accommodates socially inappropriate behaviour. Activities within the four walls of home range from boringly mundane to secret and shameful. The user experience of dwelling also includes those facets of living not shown to public.

Inhabitation usually triggers some transformations of the dwelling. Users manipulate the elements in their control to enhance the fittingness of the dwelling to their changing

life situations. When they age and are used, dwellings wear and tear. Living with their dwelling every day, users “[...] rapidly grow bored, frustrated or embarrassed by what they see” (Brand 1994, 20). Brand (ibid., 164) describes dwelling adaptation as a reciprocal process where “[t]he dwelling and the dweller must shape and reshape themselves to each other until there’s some kind of tolerable fit”. Adaptation by users happens on all scales between major renovation extending deep into the built form and continuous short-term adjustment on the levels of objects and furnishings. Most intensive remodelling often takes place when moving in, after which the cycle slows down. Every time the residents of a dwelling change, the process begins anew. How a dwelling develops thus depends on the unique skills and ways of acting of the agents in control of it (Habraken 2000, 29).

People have different attitudes to repair and are willing to spend different amounts on their dwelling. Brand (1994, 159) detects two types of home improvement: fantasy-based change driven by lifestyles and fashion that comes in blurts, and more constant reality-based change related to functional needs and upkeep of the dwelling. As opposed to professional designers who are “paid to make perfect”, users typically reduce problems just enough so that they can be solved by do-it-yourself solutions requiring just modest investment, instead of becoming a professional issue. Modifications are done without plans by improving on what already exists and can be officially invisible. However, many people also undertake comprehensive refurbishment projects with attention to every detail and involvement of building professionals. The adaptation of dwelling requires balancing between use value and resale value:

*If you maximize use value, your home will steadily become more idiosyncratic and highly adapted over the years. Maximizing market value means becoming episodically more standard, stylish, and inspectable in order to meet the imagined desires of a potential buyer. Seeking to be anybody’s house it becomes nobody’s. (Brand 1994, 73.)*

I have mentioned how user experience is taken for granted by architects (Chapter 3.2.7). As an example, Ola Nylander (2002) writes about “non-measurable architectonic attributes” that according to him are indispensable to the experienced quality of dwelling. He identifies several “fields of attributes”, the consideration of which in design can help create a strong sense of reality and connection with the present moment. These include materials and detailing, axi-ality,

enclosure, movement in space, spatial figures, daylight and organisation of spaces. Nylander like many other architectural scholars (e.g. Alexander 1979) at least implicitly assumes that the user experience of the dwelling space is constant and universally shared and thus can be captured by the architect and provoked by specific design solutions in a predictable way. This view is criticised by writers like Jonathan Hill (2003) who stresses the relationality and individuality of user experience and claims that inability of architects to acknowledge the role of users as active co-creators of architecture through use and appropriation is a major weakness in present design culture. Hill (ibid., 28) identifies three types of use: passive, reactive and creative.

*The passive user is predictable and unable to transform use, space and meaning. The reactive user modifies the physical characteristics of a space as needs change but must select from a narrow and predictable range of configurations largely defined by the architect. The creative user either creates a new space or gives an existing one new meanings and uses. Creative use can either be a reaction to habit, result from the knowledge learned through habit, or be based on habit, as a conscious, evolving deviation from established behaviour.*

The passive and reactive users are dependent upon existing conditions, which they are unable to fundamentally transform, whereas the creative user as argued by Hill has a role as important as architect in the formulation of architecture. In the rich and complex user experiences of everyday living, all three types of use can occur together, their composite being “a particular type of awareness in which a person performs, sometimes all at once, a series of complex activities that move in and out of conscious focus” (ibid., 88). Hill (ibid., 44) identifies five types of user creativity: mental, bodily, physical, constructional and conceptual. These can be accidental or intentional and occur singly or in combination. Mental creativity implies a change of perception, such as renaming a space or associating it with a memory. Bodily creativity happens when the user makes a movement that is independent of or in juxtaposition to a space, such as “a picnic in a bathroom”. Physical creativity involves rearranging a space or objects within it. Constructional creativity deals with making of a new space or modification of an existing form, space or object. Conceptually creative users are capable of envisaging (designing) new uses, forms, spaces or objects to be constructed. Hill’s writings suggest that the engagement of

users with the dwelling product is not only determined by the extent of user control allowed by built form but by individual ways of relating to the form during use.

## 5.2

# Probing the user experience

### 5.2.1

### OVERVIEW OF THE USER STUDY

The interviews that this section of the dissertation is grounded on originate from a series of user studies that were conducted in applied research projects, utilising the probes method based on self-documentation by users (see Appendices 1, 2 and 3). Probes is a “designerly” research method grounded in ethnography, developed to provide inspirational information about users to the design process (Mattelmäki 2006). In the dissertation, outcomes of probes studies are treated as data in the context of academic research, which has necessitated a more objective analysis. The aim of the user studies was to get a rich picture of the needs and experiences of individual persons in the domestic environment. The interviews focus on the housing career, housing preferences, and experienced positive and negative qualities of the respondents’ present dwelling. Their reliability and validity is discussed in Chapter 6.4. The probes study was planned by the author together with Susanne Jacobson. It was applied in three consecutive research projects with minor modifications. The probes study consisted of four parts: a background questionnaire eliciting basic facts about the respondents and their current dwelling conditions as well as their housing career during adulthood, a series of open question cards related to lifestyle and the meaning of dwelling, a camera assignment where the participants were asked to photograph topics in their living environment, and a task where they were asked to describe the course of a typical day with the help of a clock face.

Four separate user studies were realised in the projects. A total of 44 persons representing different target groups participated in the studies. They were recruited on the basis of criteria identified in the projects (see later). In three of the studies, the participants were customers of housing providers who participated in the projects (VVO, SRV and Asokodit). The VVO and SRV residents were recruited from name lists retrieved from the customer databases of the

companies and via contacts of customer service personnel. The Asokodit residents were recruited from the respondents of a web survey about housing needs that was published in the company's website. The fourth group, disabled persons, were found through an ad in a magazine targeted at people with physical disabilities.

The studies were realised by project researchers at Future Home Institute at the University of Art and Design Helsinki. The probes study kit was delivered personally to the participants by researchers. They were asked to complete the assignments within a couple of weeks and send the material back by post. The photographs taken by the respondents were then developed. After that, one or two researchers interviewed the participants. Most of the interviews took place in the home of the participant. In the interviews, the researcher went through the completed probes material together with the participant, asking him or her to describe and clarify the answers. The interviews hence discuss most of the content of the probes. They lasted from 1.5 to 2 hours. The interviews were transcribed. The transcriptions (924 pages in total) and the background questionnaires are primarily used as sources in the dissertation.

## 5.2.2

## THE PARTICIPANTS

Of the 44 participants, 34 were living in the Helsinki Metropolitan Area (Helsinki, Espoo or Vantaa), 7 elsewhere in the Uusimaa region (Järvenpää, Kerava, Kirkkonummi, Porvoo) and 3 in other Finnish towns (Jyväskylä, Lappeenranta, Turku). 28 of the participants were women and 16 men. Their mean age was 42, youngest respondent being 26 and oldest 61 years old. 7 of the participants were living alone and 14 as single adults in households with one or more children who in some cases had shared residence. 12 participants came from households of two adults and 11 from households of two adults and a child or children. One of the latter also included a third adult (an elderly relative). Details of individual participants can be seen in Appendix 2.

The participants represent various groups that were identified according to the objectives of the projects. Five of them are persons with physical disabilities living independently in their own homes (U1–U5). Six are immigrants living in rental flats owned by vvo rental housing corporation (U6–U11). Five are persons with “untypical” work also living in vvo flats (U12–U16). By this was meant types of job that differ from regular daytime work, such as shift work, part-time work or self-employment, including precarious work

situations with high degree of irregularity or uncertainty. Third group of vvo residents is made up of six single parents (017–022). These groups were identified by vvo as key customer segments, the needs and preferences of whom they wanted to know more about. The participants also include 10 residents of right-of-occupancy dwellings owned by Asokodit (024, 026, 028–035) and three other persons who were recruited to the same user study. In addition, the material comprises interviews of nine persons who had bought an expensive new flat built by SRV in Eiranranta, Helsinki (036–044). They can be described as members of the socio-economic elite. The flats were under construction at the time of the study.

It is possible to try to profile the participants according to Schulze's experience milieus presented earlier, keeping in mind that the data has not been collected by a method that would allow an accurate classification<sup>24</sup>. The figure presented below is only tentative and based on my interpretation of the interview material, as well as the age and occupation of the participants. As a generalisation, it can be said that most participants in the high-end spectrum would seem to divide between high-level and self-realisation milieus, whereas many of the vvo customers seem to be closest to the harmony milieu, and residents of right-of-occupancy dwellings to the integration milieu.

24 . Recent Finnish studies on lifestyle based resident profiling (e.g. Kytta et al. 2010b, see Chapter 1.2) tend to focus on the levels of area and building. Schulze's experience milieus are better suited for my topic because they also relate to the interior of dwelling.

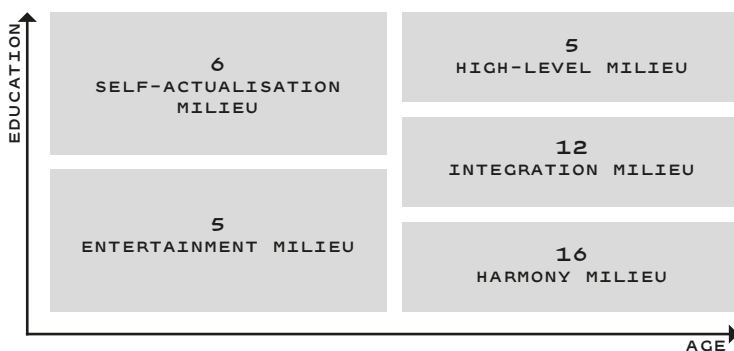


FIGURE 33 . Rough segmentation of the participants along the experience milieus (after Schulze 2005, 384), n=44.

Distribution of the participants according to year of completion, building type and tenure status of dwelling is presented in Table 4. Two very different types of housing are emphasised in the material: suburban rental housing built in the 1970s and new high-end inner-city housing represented by Eiranranta (see Figures 34–37). The data thus centres on opposite ends of the housing spectrum, leaving the middle ground, mainstream owner-occupied urban housing, underrepresented. In reality, the data is not quite

that polarised because the interviews cover a long time span. The respondents describe their entire housing careers, which in most cases have included variation in building type and tenure status. Many respondents now living in rental blocks of flats had previously been living in owner-occupied detached houses, just as several home owners even in the elite group had been renting. What also makes the polarisation less problematic is that I am not as interested in demographically or socio-economically determined differences in housing as I am of the everyday user experience of dwelling which I assume to be at least partially independent of such factors. It cannot be denied, however, especially when discussing the control of users over their dwelling, that those living in rental flats are in a weaker position, often lacking both resources, permission and incentive to invest in their dwelling.

It should be kept in mind when interpreting the results that typical customers of market-driven housing production are largely missing from the data. Families and couples with medium purchasing power living in owner-occupied dwellings are underrepresented in the material. They possibly would have emphasised different properties of dwelling than the present participants and exhibited different consumption patterns. This diminishes the relevance of the results to commercial housing production. In hindsight, the outcomes probably are somewhat overtly biased towards economic problematics in the lower end and hedonistic goals in the higher end. However, from the perspective of design, looking at “marginal” users has been effective for opening up the variation in user needs. In design studies, a small number of very diverse participants is an accepted approach.

### 5.2.3

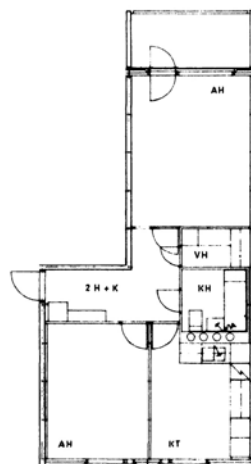
### APPROACHING THE DATA

My interest in this part of the dissertation lies in charting and making visible some of the wealth of individual experiences and strategies of dwelling as they were communicated by residents. I am not attempting to prove the prevalence of the experiences and strategies or claim generalisation to larger populations. Here I rely, among others, on British housing researcher David Clapham (2005, 150) who argues that research on the meaning of housing and homes has been driven by overt generalisation and search for universal meanings. He suggests examining the differences between individuals in experiencing housing as more fruitful approach. He also points out that the explanatory power of simple variables like tenure in understanding these differences is limited (ibid., 148).



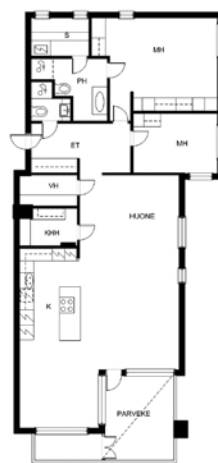
TABLE 4.  
The distribution of the participants according to year of completion, building type and tenure status of dwelling.  
[1] Includes one part-ownership dwelling.  
[2] Two of these are semi-detached houses.  
[3] The Eiranranta residents (U36–U44) had not yet moved into their new flats (finished in 2008) but are marked here because the interviews concentrate on the new flats. They were living in various (temporary) residences.

	Pre- 1950	1950 – 1954	1955 – 1959	1960 – 1964	1965 – 1969	1970 – 1974	1975 – 1979	1980 – 1984	1985 – 1989	1990 – 1994	1995 – 1999	2000 – 2004	2005 – 2009	TOTAL
Building type (block/terraced)	b t	b t	b t	b t	b t	b t	b t	b t	b t	b t	b t	b t	b t	38 6
Owner-occupied				1		1	1				1	1	9 <sup>3</sup>	14
Right-of-occupancy or other									3		3 <sup>1</sup> 2		3 <sup>2</sup>	11
Rental	1	1		1	1	2	10	1	1		1			19
TOTAL	1	1		2	1	3	11	1	1	3	7	4	9	44



FIGURES 34 & 35.

View from the Suvela residential area in Espoo, built in the 1970s, and floor plan of a typical one-bedroom flat in the area (59.5 m<sup>2</sup>, Joupinmäenrinne 6, owned by vvo). With its prefabricated concrete element houses and high share of social housing, Suvela is example of a relatively low-end neighbourhood built during the peak suburbanisation period. 14 of the participants (U6–U11, U14, U16–U22) lived in rental flats owned by vvo here or in similar 1970s housing estates. At the time of the user study, their flats were about three decades old. (Photographed by the author in 2014, floor plan retrieved 6 March 2013 from [www.vvo.fi](http://www.vvo.fi).)



FIGURES 36 & 37.

View from Eiranranta, Helsinki, and floor plan of a two-bedroom flat in the area (129.5 m<sup>2</sup>, Piritanaukio 1, built by SRV). Nine of the participants (U36–U44) had purchased a new flat built by SRV in here. The Eiranranta residential area was built in 2006–2008 on industrial wasteland by the sea near the prestigious old neighbourhoods of Southern Helsinki. It represents most expensive urban housing production in Finland of its time. (Photographed by the author in 2014, floor plan retrieved 6 March 2013 from [www.kiinteistomailma.fi](http://www.kiinteistomailma.fi).)

In my analysis of the user data, I have concentrated on the relationship between users and dwelling as a systemic, designable product. The main objective has been to discern connections between the everyday user experience of dwelling and its designable attributes. Another objective has been to shed light on the reciprocity and congruence as well as the mismatches between everyday living and the composite dwelling product. This hopefully contributes to an increased understanding of how dwelling as a product and object of design is to be defined from the perspective of different users and what specific attributes or elements of it are experienced as valuable by them. The analysis combines qualitative content analysis and classification of the data with the help of theory-based frameworks presented earlier. More specifically, I have looked at the following issues:

- The composition and meaningful properties of the dwelling product as described by users and as revealed through everyday experiences. What kind of combinations of valuable attributes of dwelling emerge from the data and how do they relate to the systemic dwelling product and to design? What kind of conflicts with present housing can be detected? (Chapter 5.3.)
- How do users interact with and manipulate the dwelling product? What kind of (active and creative) strategies do they adopt for seeking fit and accommodating the dwelling product to their needs and preferences? (Chapter 5.4.)

Excerpts from the interviews quoted in the following text have been edited. Filler words and repetition has been omitted, and separate sentences in many cases combined into readable paragraphs. Lengthy discussions around a subject have sometimes been compressed. I have, however, tried to preserve the original content and meaning expressed by the respondents as accurately as possible. The quotes are translated by me from Finnish language transcripts made by research assistants of the recorded interviews.

## The dwelling product as defined by users

### 5.3.1

#### DWELLING AS A BUNDLE OF VALUABLE ATTRIBUTES

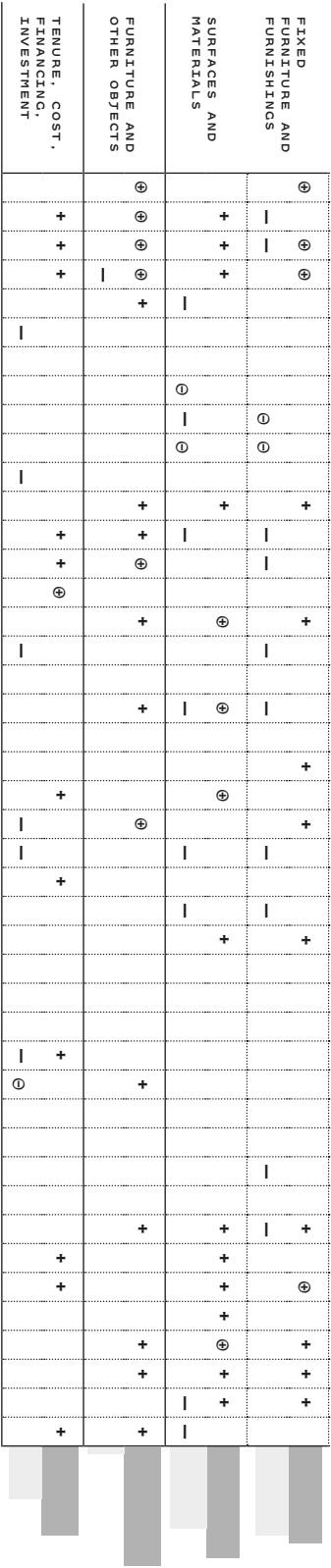
My initial hypothesis was that similarly to the housing concepts fabricated by producers, the users of housing understand and describe their current or desired dwelling as a collection of valuable attributes (designable elements of the dwelling product). Eliciting these bundles of attributes from the empirical material could provide valuable information about how dwelling as a designable product is – or how it ought to be – defined from the perspective of users, and diminish the gap between specific design solutions and user knowledge that has been identified by previous research. To get an overview of the data, I first collected all important attributes mentioned by the users in the interviews and background questionnaires, taking into account their relative weight as expressed by the users. Figure 38 shows the distribution of the attributes in their present dwelling experienced by the participants as positive and negative situated on levels of the dwelling product. It is mainly based on the part of the user study that concentrated on evaluating the pros and cons of the users' present domestic environment.

There are three specific instances in the material where the users talk about the attributes of dwelling that are important and valuable to them, each emphasising slightly different type of user value. One is when the users describe their housing history and reasons for moving. Here they reflect on the desirable properties in dwellings that have influenced their housing choices and differentiated their dwellings from each other. These often relate to quantitative aspects of dwelling, such as location, price and size. Another instance is when people evaluate the user experience of their present dwelling. Here they give more detailed opinions about tangible dwelling features in use, as experienced in everyday living. The third perspective to valuable attributes is provided by housing dreams and desires. The users here come to reveal attributes of high emotional value. The three aspects merge in the narratives of users, like in this account by a young woman (incidentally with physical disabilities) of the reasons for choosing her present flat. It serves as good example of what I mean by a bundle of valuable attributes (see Figure 41):

*An owner-occupied dwelling is financially more sensible. The area was close to services and to our workplaces. Our previous flat was impossible because it was on the third floor and there was no elevator. This is on the ground floor with just a few steps at the entrance. The bathtub is something that I've always liked. Own parking slot is definitive because it's difficult for me to take care of the car in the winter. The balcony is a substitute for my own little yard in the row house [that I dream of]. And the area is quite verdant. The price was one reason as well. In the beginning of your working career you can't think of anything too fancy. (U3)*

Plenty of quantitative surveys about the weight of dwelling attributes to residents have been realised in Finland. This type of queries that aim at statistical validity and generalisation are among the most common methods of producing knowledge about users in the housing field. They can be useful as indicators of general trends but rarely provide new insights for design. I wish to complement such approaches with more in-depth knowledge about individual collections of attributes and their connection to design. To mention two examples, a recent nation-wide survey lists a sufficient amount of space, affordable living costs, and own peace and privacy as the most important attributes of dwelling (ROTI 2013, 14). Home automation, sustainability and accessibility were the least valued attributes in this survey. The results of another large survey indicate increasing emphasis on experiential and aesthetic qualities of dwelling (Hasu 2012). Among the options of sustainability, safety and entertainment, the last attribute ("viihteellisyys") was rated as most important. This rather vague term denotes experiences created by both technology, dwelling design and the environment. Unsurprisingly, kitchen, bathroom and the interior surfaces were identified as most wanted objects of refurbishment in own dwelling in the survey. Given the opportunity to have ten extra square metres, a third of the respondents would have opted for a larger living room or kitchen.

Before continuing to more detailed analysis of individual collections of attributes and their relationship to the hierarchy of built form (in Chapter 5.3.2), I will present some general observations from the whole data. In the following pages, I will first go through the typical positive and negative dwelling attributes mentioned by the users on different levels of built form. I will then discuss the common characteristics of each user group.



**FIGURE 38.**  
The distribution of the attributes in (present) dwelling experienced by the participants as positive and negative on levels of the dwelling product. The main levels from above are area, house, apartment, objects, and ownership. Circled symbols mark strong emphasis, indicating either a concentration of several different attributes on one sub-level, or an attribute of high significance to the user. The attributes mentioned by the Eitrananta group mainly concern their future dwelling. Columns show the total amount of attributes on each sub-level (n=44). Based on analysis of the user interviews.



Figure 38 shows that the attributes mentioned by participants are distributed across the levels of the dwelling product. However, two concentrations of attributes can be detected that attracted more user response. These are the location of dwelling and quality of the immediate living environment on one hand, and the spatial and functional qualities of the dwelling proper on the other hand. The importance of these two levels was rather expected and is corroborated by previous research. The users' evaluation of their living environment was predominantly positive. This is in accordance with surveys on the subject (Strandell 2011, RÖTTI 2013), but may also tell of users' ability to selectively distance themselves from the downsides in their environment. By contrast, attributes connected to spatial configuration of the dwelling were both positive and negative. The interior of the dwelling seems to have a very tangible presence in both good and bad.

There are some typical attributes on each level that were frequently mentioned by the users. They are presented here beginning from the area level. Figures in brackets indicate the number of users who mentioned the attribute. In the area level, the majority of respondents (32) considered the location of their dwelling in the urban region good. This meant easy (public) transport connections to work, school, hobbies and more central parts of the city, and conveniently situated local services, most importantly a grocery store. A good school in the area had been the decisive attraction for one family (033). Even the users who had initially ended up in a less preferred area due to sudden life change or sacrifice of central location in favour of more living space most often had grown to like their living environment (e.g. 022). However, three persons considered the suburb where they were living too remote, socially unfamiliar and lacking of services (08, 016, 019). One of them did not want to go outside from her flat in the evening because she perceived the neighbourhood as unpleasant and dangerous. This kind of experiences were rare among the material. Most users did not express special concerns about safety or security. The users who assessed their environment negatively could still be very content with their flat and vice versa. Following quotes sum up some of the mixed experiences:

*I like being at home, but the environment is hopelessly glum. Suburban living is not for me. I don't know anyone here and the environment doesn't inspire me to leave from home. In the city, I can walk around for hours and always find something interesting. Here, there really isn't anything even in the centre. (019)*



*[Our present flat is the best in which I have lived because] it's colourful and I have pictures on the wall, the atmosphere is homely and it feels safe and good to be in. But the area sucks. (U16)*

*I believe that our family is rather invisible, our existence is hardly noticed in the neighbourhood. That's how it is nowadays. (U9)*

For the users with disabilities, the fact that they are being noticed most of the time when moving outside could be source of negative experiences. One participant especially liked her neighbourhood because several care institutions and special housing in the area had made the local residents to get used to different people so that she did not stand out when moving outside (U1). The users with disabilities also had problems with the accessibility of local shops and with the subsidised transport services that are a requirement for them to be able to live independently. The steep slopes of pedestrian underpasses and other public areas made parts of the neighbourhood inaccessible for a young woman who was using mobility aids (U3).

Concerning the quality of the immediate surroundings, presence of nature was an often mentioned positive attribute by the participants (12). This could be realised by many elements in the environment ranging from natural forests, public parks and leafy residential blocks to greenery in their own yard or an open view to nature from their window. Peacefulness of the area was emphasised by six users. This meant lack of too much traffic or busy activities in the area, as well as undisturbing neighbours. Peacefulness was also connected to low density of housing. On the other hand, all users living in central urban areas highly valued a lively, walkable and dense urban environment with a feeling of being in the centre of things and with many possibilities for social encounters (U23, U24, U40, U41, U43). The safety of their present living area for children was referred to by four users. The realisation of this attribute seemed to be connected to a clearly demarcated semi-public territory in human scale and with suitable degree of social control (U30, U33). Knowing one's neighbours increased the feeling of safety (U20, U32, U33).

Good connections, closeness to nature, peacefulness and safety are the qualities almost universally valued by Finns according to surveys (e.g. Strandell 2011). The findings thus consolidate what is known and as such do not provide many new insights. Previous research has suggested that some people

prioritise the environment in their housing choices whereas others focus more on properties of the dwelling (Hirvonen et al. 2005). There appear to be some more environment-oriented users (U12, U25, U34) and some more dwelling-oriented users (U16, U19, U44) among my sample. Such division, however, is not evident in the case of the majority and may just reflect the value compromises that people have had to make during their housing career. The affluent users most often had been able to optimise both variables. In the interviews the respondents were asked to describe their living environment broadly, which probably also explains the relatively even distribution of attributes on different levels.

On the building level, joint spaces and facilities took an eminent role in the participants' evaluations (17). In general, they appreciated the joint facilities in their house such as sauna, laundry room, common yard, playground, and parking place. Common areas in suburban rental apartment houses from the standardisation period also received negative comments. Untended and broken facilities, bleak playgrounds and lack of places that would encourage social interaction such as benches in the yard were a cause of uncomfortableness. For the Eiranranta residents, the indoor parking hall in their future house was an anticipated comfort factor. An elevator was an essential technological component in their house for eight users. Lack of it was considered a downside by a few others. The role of house maintenance and management was usually noticed in situations where they did not work properly. Agreeable social relationships in the house were emphasised by a third of the participants (16). In some houses the residents were engaged in lively social interaction with their neighbours, whereas other participants hardly knew anyone in their house or considered the neighbours unfriendly or a cause of disturbances (10). This topic will be discussed more in detail later.

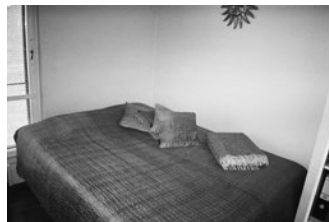
Mentions concerning building type and architecture were scarce in the material, mainly referring to newness of the house and quality of construction and building materials. This seems to be in accordance with the notion by developers in my interviews about the unimportance of external architectural features to residents. On the other hand, house type and architecture were not specifically addressed in the user study. Housing architecture beyond functional and spatial properties of own dwelling perhaps is taken for granted by users or perceived as unproblematic. Laypeople may not have a language for describing architecture equivalent to the language of professionals. This does not mean that architectural design would not contribute to valuable user experiences. One can assume that properties of architectural design hide behind

epithets like cosy, nice or smart-looking that people used of the buildings in which they were living.

In the dwelling level in control of individual households, semi-private outdoor spaces like a balcony, terrace or own garden were very important features to the participants who had those (23). Open view from own dwelling, preferably to nature, and in Eiranranta towards an urban park and the sea, was equally valued. A middle-aged immigrant woman, for instance, named seeing the sky from her window the single best feature in her dwelling (U7). Some users preferred ground floor because of direct access to outdoors. Others liked a higher position above the ground because of safety (U6) or a better view.

16 interviewees were satisfied with the size of their dwelling while 10 had too little space. The standard dwelling type in old suburban blocks of flats with spacious plan and large, almost equally sized rooms (see Figure 35) was deemed to perform well in this respect, even if the flats were lacking aesthetic qualities and lagging behind by modern technical standards. Spaciousness is arguably the most valuable attribute of these flats to users. In comparison, the right-of-occupancy flats, mostly designed in the 1990s and typically having smaller kitchens and bedrooms and less storage space, received more negative comments. As noted, the interior space of dwelling and organisation of its different rooms and functions attracted a concentration of both positive and negative mentions. One should keep in mind that the study also emphasised this level. Many users appreciated the overall spatial design and usability of their dwelling. Unsatisfactory relative proportions of rooms was a typical spatial problem identified by them. Bathrooms and kitchens could be small and unpractical, kitchens too open to the living space, or bedrooms too large or small at the cost of other rooms (U11, U14). Another common complaint was lack of storage space either in the form of walk-in closets or built-in cabinetry. The disabled users despite modifications to their flats had some accessibility problems.

There is variation in attitudes towards home technology and the technical equipment of dwelling among the participants. A person could be happy with well-functioning basic necessities like heating and warm water (U6, U8). However, especially the users with children living in the rental blocks of flats found the technical standard of their dwelling inadequate. Some had themselves upgraded the equipment and appliances in their home (U17, U18; see Chapter 5.4.1). The importance of assistive technology was emphasised by participants with disabilities. Examples of added technology



**FIGURE 39.** Photographs taken by participants of positive attributes in their domestic environment. From top row left: Forest in front of house (U21); garden allotment (U26); lake view (U15); urban courtyard (U40); balcony (U13); hobbies (dogs, U34, golf, U17); summer cottage (U33); living room (U40); favourite easy chair (U24); bed (U44); inherited cabinet (U27).



FIGURE 40.

Photographs of negative attributes. From top row left: Derelict house in the neighbourhood (U24); car park next to own yard (U2); steep stairs (U19); no hallway in flat (U24); plastic flooring (U18); old electricity installations (U20); too high balcony doorstep (U3); unnecessary sauna used as storage (U34); lack of storage space in hallway (U5); cable clutter (U31).

in their dwellings include automatic doors, electronic locks, wireless security systems, air conditioning, motorised kitchen cabinetry, and motorised bed (U1, U2, U4). For the Eiranranta customers, the high technological standard of the flats with district cooling was again a valued attraction.

Positive attributes related to fixed furniture and furnishings highlighted their functionality and good condition, aesthetic quality, and matching with the resident's own taste. Outdated, worn, unmatching or aesthetically displeasing furniture especially in kitchens and bathrooms was assessed negatively. "Own-looking", "stylish" wall and floor surfaces and durable good quality materials that are easy to maintain and feel good to touch were valued by the users. On the level of objects, pieces of furniture apart from obvious functional needs served pleasure, expression of identity and connection to personal history. Many named bed or sofa as the best place in their home. Home decoration, pictures and textiles as means of personalisation were especially important to users who were not allowed to touch upon their flat or were less committed to staying in it (U16, U23). Finally, positive attributes related to the ownership of housing that came up were affordable rent (6), financing models that had enabled some interviewees to purchase an owner-occupied flat with less capital, and good value of own dwelling as investment. Expensive rent, constantly rising occupancy fee and bureaucracy of the right-of-occupancy system earned negative remarks.

Segmentation of residents is not in the interest of my study. Despite some common characteristics resulting from the recruitment criteria, each participant should be seen as individual. The number of them also does not allow statistical generalisation. There nevertheless are some patterns that seem to distinguish the experiences of the user groups at large from each other and are perhaps worth pointing out. (These may be influenced by variation in the content of the substudies, see Appendix 3.) To understand the differences one must also look at the dwellings that the users were living in.

The persons with disabilities in general had less privacy in living. They were in many situations dependent on various service providers or personal assistance, which sometimes very tangibly penetrated their home and intimacy. On the other hand, they were inventive and experienced in negotiating enhancements to their dwelling together with authorities and producers. The immigrants can be described as modest and family-oriented. They in general were contented with their dwelling even if it was of basic standard. They hoped to avoid conflicts with neighbours and did not want to disturb others. Some perceived the Finnish housing culture and manners



of neighbours as unsocial. They valued gatherings among family and friends. They typically maintained large foodstuff reserves and found the storage space in standard kitchens insufficient. People with untypical jobs due to irregular work-life rhythm had special requirements related to enablers like public transport. Their rhythm of living sometimes clashed with that of the neighbours. Short-term jobs and uncertainty of future diminished their ability and willingness to invest into dwelling. The housing choices of single parents had often been sudden and constrained by the location of their ex-spouse. Many were for now focused on managing everyday chores and had put their personal needs aside. Their dwellings had a changing number of residents due to shared residence of children.

As mentioned, the right-of-occupancy residents were less satisfied with the design of their dwelling than the other participants. They seemed to have higher hopes of their future housing career than members of the other groups. On the other hand, many were socially active and committed to their house and living environment. The majority of the future Eiranranta residents had the financial resources to fulfill most of their housing needs. Several were “empty nesters” with long career as entrepreneur who now were seeking a pleasurable “second last home” close to attractions of the city where they could live as long as possible. They emphasised the aesthetic quality of their dwelling, were confident about their taste and took high quality in all levels of the dwelling product for granted. They used words like comfort, harmony, uniqueness and good investment when discussing their housing choices.

*In living, what you aspire is feeling good. You want the environment to be pleasant and everyday living comfortable, so that you don't have to concern yourself with things not working as they should. (U39)*

*[The flat in Eiranranta] will be a secondary home for us adults where we can spend some quality time away from the everyday. Quality is the word to describe it. (U43)*

It is difficult to isolate what in the user experiences tells about differences in individual lifestyles and housing preferences, what is explainable by the users' socio-economic position, family situation and life phase, and what is consequence of the properties of the dwelling in which they happen to be living – that is, results from use. It is evident that dwellings as material artefacts have influenced and perhaps even to a large degree determined the bundles of attributes mentioned by the users. My findings then would

tell more about the reciprocal relationship between users and the material environment than about users themselves or about their preferences. In this sense, it can also be considered a weakness of the study that it concentrated so much on evaluating the users' present dwelling instead of attempting to elicit bundles of attributes with methods less constrained by the everyday experience.

### 5.3.2

#### THE MATERIAL COMPOSITION OF THE ATTRIBUTES

There is variation in the consistency and scope of the bundles of attributes that users employ for describing dwelling. When evaluating their present dwelling or talking about their housing wishes, they do not describe the "whole" of dwelling but highlight those parts or properties of it that are personally valuable to them or meaningfully differentiate it from other dwellings. Other parts or properties that are less valuable or are valuable but belong to the expected basic functions of housing, such as its function as shelter, are not emphasised in the users' depictions. The dwelling product "in the mind" of the users can be defined as a heterogeneous bundle of benefits where designable components on different levels of built environment are assigned value depending on their congruence with the needs and preferences of the individual user. Dwelling features can contribute to different types of value, such as economic, social or aesthetic. The collections of attributes communicated by users address different elements of the dwelling product and are distributed variably within the built hierarchy. In this way, they resemble housing products in the market that were analysed in Chapter 4. Examples of attribute bundles elicited from the user interviews are shown below (Figure 41).

The examples are from a 26-year-old waitress living with her child in a rental flat in a typical 1970s concrete housing estate in Vantaa (U22), a young office worker woman from Espoo living with her partner in an owner-occupied flat from the same period (U3, see the first quote in Chapter 5.3.1), a male architect living with his family in an old residential block in inner-city Helsinki (U40), and a single 54-year-old engineer who was moving to Eiranranta (U38). He described his wishes as follows:

*In the new flat I was looking for certain comfort of living and a good address. I was also thinking of it as an investment. Perhaps I will never need to move again. In a new house there won't be any big renovations coming, like the plumbing*



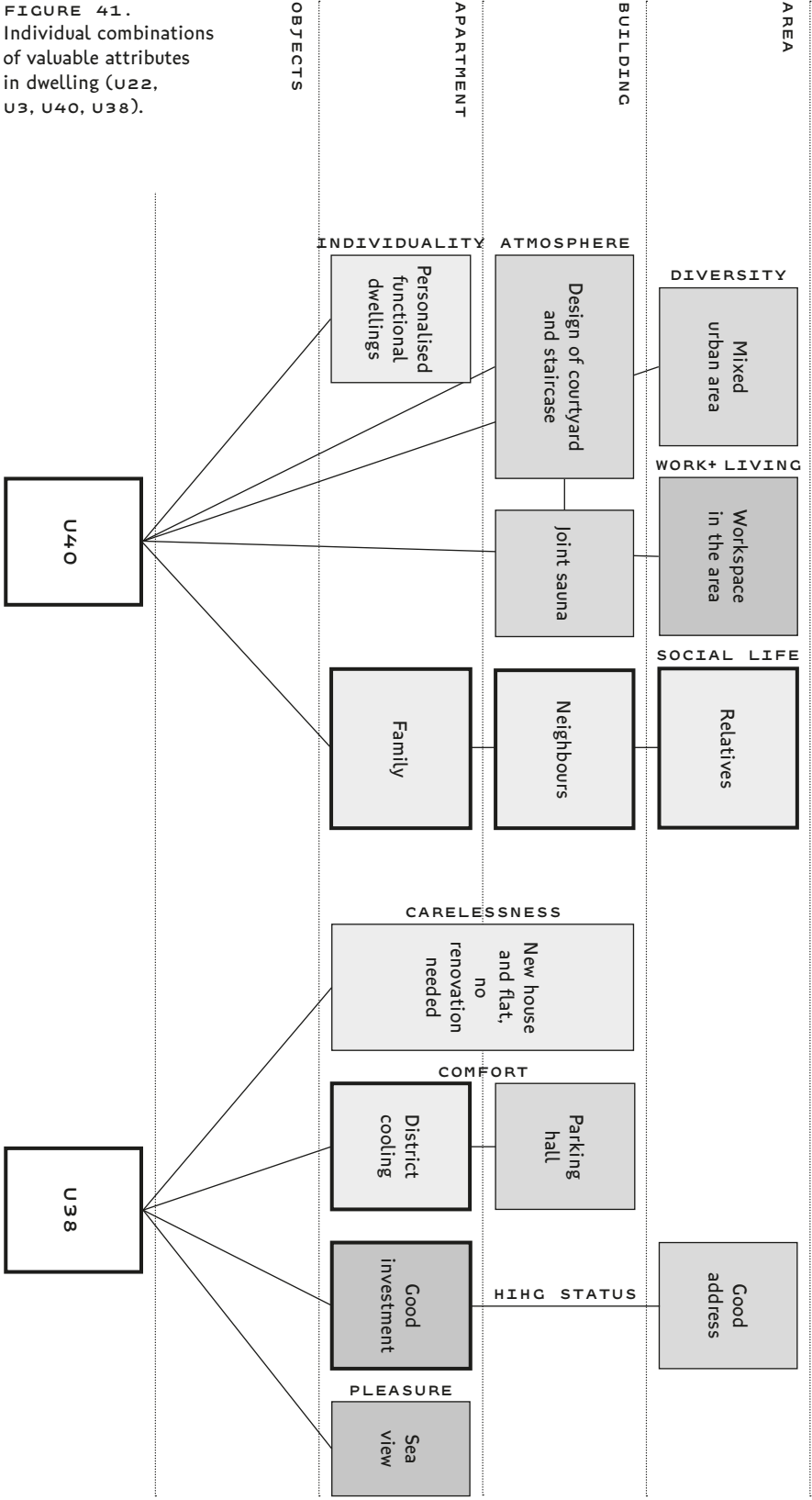
*renovation that forced us out from a previous flat. So newness and comfort were the main attractions. The prospect of never needing to scrape ice from the car window in the mornings anymore. And the sea view of course. (U38)*

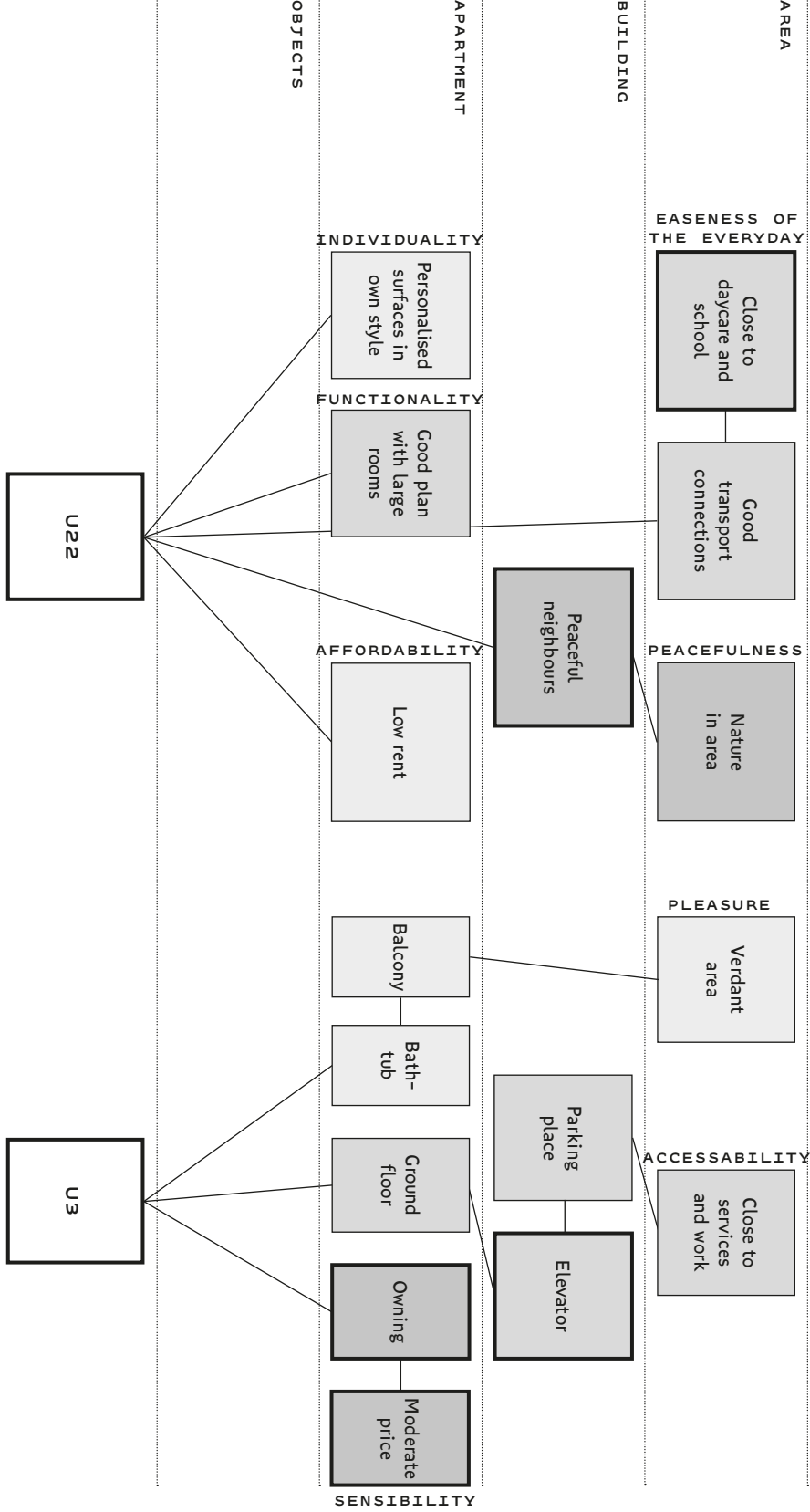
The first example represents a relatively neutral collection of attributes covering the basic elements of the dwelling product. Bundles like this are common in the material and can be considered a core set of dwelling requirements that probably is shared by the majority of residents and forms the basis for individual variations. The second example shows a variation that emphasises pleasure, accessibility of space and sensible economic choices. The third bundle illustrates the preferences of a creative professional who values aesthetic quality and diversity of old urban environment and likes to mix work and living. This person also specifically included the social component into his definition of dwelling. He adheres to the self-actualisation milieu in Schulze's classification. The fourth example illustrates the preferences of a person closer to the high-level milieu. He emphasises comfortable and careless living made possible by technology, housing as investment, and high social status. A few Eiranranta dwellers expressed similar preferences (U36, U39). Many of them also focused on the experiential quality of the interior:

*Space and lightness are the most important qualities. Then come quietness and peacefulness. Temperature is important as well. [...] Surface materials, clean surfaces, clarity and harmony are also important. Harmony for me is having all extra stuff out of sight. The environment and views are crucial as well. I could never live in a suburb, partly because I'm so rooted to this area where I've lived since 1979. So you choose the area first and then a dwelling within it. (U37)*

The diagram shows how designable elements on various levels of built hierarchy combine to provide an immaterial benefit or value to user and how individual users emphasise different types of benefits or value when talking about their housing preferences. In the interviews, the users typically connected a physical or other designable element of the dwelling product ("parking hall") with meaning, value, benefit, anticipated impact in everyday living or experiential goal ("comfort"). The interviews thus reveal connections between user value and dwelling features in a similar manner than the means-end approach touched upon earlier. The examples show how dwelling components serve as means to personally valuable ends and participate in creation of user

FIGURE 41.  
Individual combinations  
of valuable attributes  
in dwelling (U22,  
U3, U40, U38).





value. However, the connection between design features and value is not always evident. Some users list tangible attributes without delving into their meaning, while others emphasise generic experiential qualities of dwelling like “atmosphere” without associating them with specific designable parts. It is also important to keep in mind that the lived experience of dwelling is holistic. Dwelling in use cannot be reduced merely to an aggregate of its parts.

Examining the relationship between dwelling features and user value further, we can see that experiences and needs penetrate the levels of built environment. Their fulfilment most often necessitates the confluence of many elements or design acts in various scales. Lightness in a dwelling and view from it to the surroundings, for instance, are attributes to the realisation of which multiple elements in the built environment partake, including building density and block structure, design of outdoor areas, house type and form, positioning of flat in the building, and windows and their direction. Lightness is also contributed to by surface materials and colours, pieces of furniture and objects like lamps (U23, U37). Individual material constructions leading to valuable experiences in dwelling can be extracted from the material. An example is provided by a woman (U26) whose enthusiasm for gardening and being in touch with nature was supported by a chain of physical elements extending from windowsills filled with plants to a balcony that acted as a planting room, the common courtyard that she was taking care of with a neighbour, a gardening allotment leased from the city on the other side of the street, and public parks and forests in the area. In this way, valuable user experiences constitute chains of interlinked design requirements across the built hierarchy. Importantly, a given experience can be met by different elements and their combinations depending on the person and the dwelling. A design element can also contribute to many experiences.

The figure below (Figure 42) portrays the variety of elements that users connected to one immaterial attribute of dwelling, safety. This particular attribute is presented as an example because of the richness of interpretations it evoked among the participants. As noted, safety in housing as such was not seen as a crucial problem by them.

The elements of safety divide into at least five categories that were emphasised differently by the users. One aspect is the protection of private territory against others by technological and physical barriers like locks, intercoms, security systems and walls. Some users had experiences of theft and feeling of unsafety in their living environment, but safety in general was not seen a problem in Finnish housing.

FIGURE 42.  
The material composition  
of the experience of  
safety (security) with  
individual variation.



Several users in the elite group stressed that security systems and walls may create more unsafety (U38, U43, U41, U42), even if a few also appreciated the security system in their future house. Two participants stated that they usually keep their door unlocked during daytime and sometimes even in the night. Another particular aspect of safety that came up was the safety of children in semi-public and public areas – demarcation of space for children and their protection from dangers. A third aspect is related to safe mobility, and accessibility. Furthermore, there is a material everyday living aspect to safety. Secure functioning of the dwelling and its utilities, proper maintenance and upkeep, and security of tenure all contribute to feeling of safety. Finally, safety has a social dimension related to minimising of disturbances and conflicts, trust between neighbours, social control, and social support.

Multiple levels of the material environment also contribute to negative experiences. For an immigrant man in his thirties living in a 1970s suburb (U8), elements such as the bleak and uniform children's playground, the balustrade of his balcony that was too high to allow a view to the environment when sitting down, and the master key in possession of the landlord had become tangible tokens of social suppression experienced in an alien society. The whole suburb here takes the role of a device of domination, a kind of trap that with all its material properties seeks to amplify the state of mind of its captive. The excerpt below not only conveys a feeling about lack of control over his own dwelling but also indicates a mistrust towards authorities, perhaps grounded in previous experience. They are seen as threat to security rather than as source of protection or neutral service provider.

*It's difficult [to feel at home] in a rental flat. You should be allowed to do what you like even if it's rented. Then I could say that this is my place. I don't understand why the housing company has to have our keys. [...] There's no security because the police or maintenance man can come in anytime. [...] You can't trust [that they respect your privacy]. It doesn't feel like your own. (U8)*

The experience of another immigrant man (U10) of the same age living in a similar environment was quite different. For instance, he liked the high balustrade because it is safe for children. Solitary moments in the balcony on quiet Sunday mornings for him were among the most pleasurable. This shows how individually the designed material elements of dwelling can be experienced by people who seemingly belong to a same demographic group and live in nearly identical dwellings.

*What I'm really happy about is the balcony. It's fantastic! It's glazed all over. It's also safe because of the height [of the balustrade]. [Otherwise] there might be an accident when the children peak down from there. [...] It's great to sit on the balcony, just gaze outside and have a coffee. You don't disturb others. [...] I would take visitors directly to the balcony. (U10)*

Users' individual personalities and ways of living as well as diversity in their previous housing pathways mean that they approach the designable elements of dwelling differently. These may influence a user's evaluation of her flat inasmuch as the "objective" effect of its designed features, even if the physical design of environment with its affordances also plays a part in the experience, as the balcony balustrade above. A person can be dissatisfied to a design that another person finds well-fitting based on her attitude towards housing and other experiences in life. It is therefore difficult to predetermine the value of a specific dwelling design to user. The meaning and importance of dwelling features, most basic functions notwithstanding, seems relational and individually defined.

Also seasonal change affects how the built environment is experienced. Nearly all users with disabilities found mobility in winter a major problem. Poor accessibility of the outdoor areas, immediate neighbourhood and local services due to coldness, ice and snow significantly diminished their territory during winter months. In the summer, a balcony or garden extended the users' dwelling space and offered them pleasure, a hands-on connection to nature, and a secure outlook to the surrounding community. The woman quoted below, on the other hand, found summer the most inconvenient period. In the terraced house where the person quoted after her was living, the social rhythm of the house was alternating along seasons.

*It's ghastly to live in a flat in the summer. When you go out you always have to get properly dressed and see that you have clean trousers on. In the summer cottage you can just go and don't have to think about it. (U28)*

*In the winter nothing happens here. People just go to work and come home to sleep. In the summertime it's more lively, we sit on each other's balconies and barbecue and do things like that, and tend the green areas together. (U35)*

To sum up, multiple designable elements on different levels of built hierarchy combine to provide user value in housing. A given element can contribute to the creation of

different types of value. On the other hand, the same value can be met by different elements depending on the specific dwelling and the user. To add complexity, the same element can have different meaning to different users. Experience or value of an element may also change according to its context (adjacent elements) and external circumstances. Moreover, it seems that there is variation in what types of value people emphasise in housing. All this means that the relationship between a user and the dwelling product remains partially unpredictable and relational. The findings also suggest that dwelling design for user value necessitates design across multiple levels of built environment.

FIGURE 43.  
Requirements and characteristics on levels of the dwelling product arising from different life situations or traits of users.

### 5.3.3

#### QUESTIONING THE STANDARD DWELLING

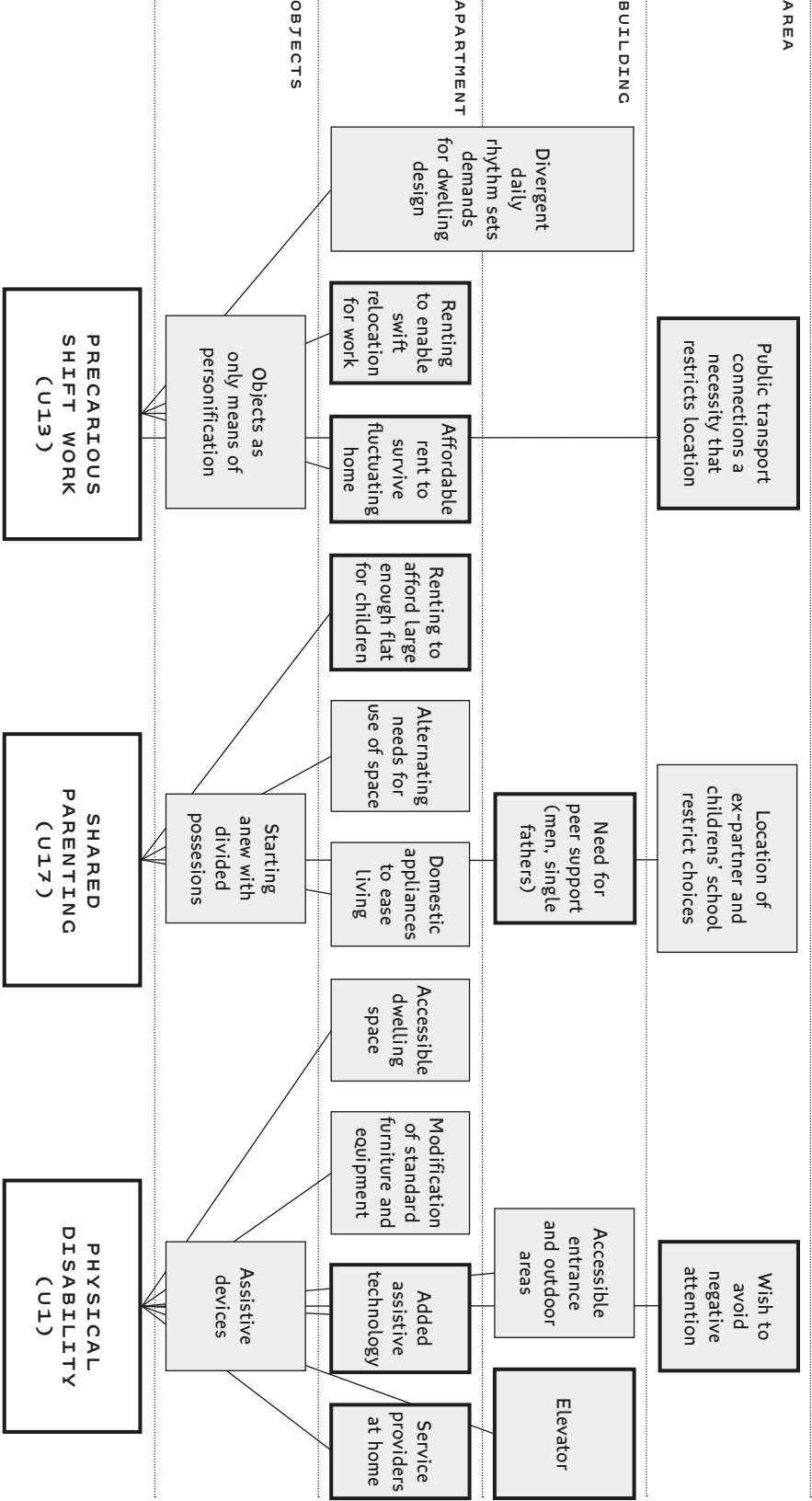
The dominant dwelling design replicated in industrial housing production is largely defined during the standardisation period. The notion of user inscribed within it essentially still is the nuclear family with uniform needs that performs its predefined functions in synchrony with other households. The components of the prevalent dwelling type are consolidated by regulation, design conventions and the way of building, and are rarely questioned. However, the experiences of users in my material show that there are situations in which their lives clash with the standard dwelling and where they come to question its design. In this subchapter, I will discuss three such instances: non-standard users, contested functions in dwelling, and the need for multifunctional reserve space.

#### NON-STANDARD USE(R)S

Overall characteristics of the user groups were outlined previously. I will here analyse more specifically what requirements certain user needs and life situations that diverge from the average set for the dwelling product and how they contradict the standard dwelling. The examples I shall examine are precarious shift work, shared parenting and physical disability. Rather than as inherent characteristics of a person, they can be seen as different types of *use*. Each directs attention to different designable attributes of the dwelling product (see Figure 43).

An example of the impact of work to housing needs is provided by a 28-year-old single woman working as a youth leader in short-term employment and doing shift work (U13). The consuming nature of the job itself, irregular working hours, and uncertainty of the continuity of work in





her case were reflected as special needs on several levels of the dwelling product. Her choice of location, for instance, was guided by reachability by public transport at late hours and eventually to ever new parts of the city:

*I work mainly in two shifts. It's crucial to be able to get home with public transport after the evening shift. The local train operates until the early hours. If I would live somewhere more remote that would be a challenge. Due to shift work I often need to cook and clean late at night. I have a different rhythm of living than my neighbours who go to work in the morning. [...] [In late evenings] I try to tidy up silently and walk in woollen socks because of some complaints [from a neighbour].*

A user's rhythm of living that is in asynchrony with the collective rhythm of the community here sets demands for material elements of the dwelling such as sound insulation and the surface materials. Peacefulness, privacy and freedom to do what she likes inside the four walls of her home were very valuable to this person as counterbalance to hectic, social work. At the same time, precarious employment had taught her to avoid getting too attached to a particular dwelling. Uncertainty also prevented her from investing money and effort into her flat. Both literally and regarding her housing career, she had to be on her toes all the time:

*This is kind of a forced solution. When you are in short-term employment it's good to have a cheap dwelling so that you don't need to worry about it. If I would live more expensively I would have more anxiety.*

*I would like to improve my flat but am reluctant because of uncertainty about where work will take me. I would love to paint the walls and do some little enhancements that also the landlord would support. But it's always just left in the air because I feel that I may have to relocate soon for work. I still have some unopened boxes [from previous removal].*

Shared parenting presents other type of demands for dwelling. As noted, the housing choices of single parents had typically been sudden and constrained by proximity to the other parent. After separation, they had prioritised the children's need for staying in a familiar area over their own housing wishes and had often accepted the first dwelling on offer in the area. Some had been forced to move from owner-occupied to rental flat because they could not afford a

large enough dwelling to accommodate the children on their own. Shared residence of children meant that their everyday living was characterised by rotation of two very different modes: periods with children, when their dwelling had many residents and the daily rhythm was busier and more logistically demanding, and periods of living alone, when they had excess time and space at their disposal. The experiences of single parents highlight two features of the dwelling product that seem to fail in responding to their needs: flexibility of the size of dwelling, and level of technical equipment and appliances to ease the everyday chores. Two single fathers in the study especially put forth that the standard equipment in older rental flats is insufficient for a family with children (U16, U17). The other summed up his alternatives:

*I will most probably stay in a rental flat if I don't happen to find a woman who would get interested [in sharing a housing loan]. Alone I have no chance. Because of the children I can't move into a one bedroom or studio flat, which would be the only that I could afford without having to move too far [from work and the children's mother].*  
(U17)

The users with physical disabilities such as the woman quoted below, who is short in stature and has a genetic disease affecting her mobility, had concrete experience of what it means to live in a dwelling that is designed for average users when you in some significant aspect diverge from the average. Their housing choices had been governed by the demand for accessibility and had necessitated modifications to dwelling space, furnishings and technology. Circulation spaces indoors and outdoors, design and measurements of kitchens and bathrooms, as well as minor subcomponents of the dwelling such as doors, doorsteps, locks and handles were points at which their individual functional requirements collided with standard design solutions, hindering independent everyday living. The users' insistent and often tedious efforts in correcting the mismatches arising from the clash between their special needs and the standard dwelling had made many of them experts in the personalisation of the dwelling product.

*Accessibility has been the common thread [in my housing choices]. It has also restricted my choices. Even with a bit of money it's not easy to find [accessible housing solutions]. I need to be reached by ambulance, special taxi and regular taxi, and I have to be able to move around with wheelchair, rollator and walking sticks. That narrows the*

*choice. The dwellings of my childhood were not particularly accessible. I had my parents and siblings to carry me and objects around, which made the issue less crucial. But to be able to live independently and autonomously, accessibility is an absolute requirement. (U1)*

The disabled users can be considered as innovative lead users whose expertise in resolving barriers of accessibility in the domestic environment could potentially be useful in developing products for other users as well, such as seniors (Jacobson & Pirinen 2007a, 2007b). They criticised the customary accessible design solutions as hospital-looking. Aesthetics, pleasure and connotations to lifestyle were important features for them in assistive products and in the home that sometimes could outweigh functionality. For example, a woman had kept her inaccessible bathtub instead of the accessible shower automatically suggested to her by the city authorities because of the pleasure and freedom of movement she experienced in bath (U3). The users with disabilities had invented creative and aesthetically pleasing improvements to their flats and realised them together with authorities and service providers (see Chapter 5.4.1). The suitability of barrierless dwellings for all users was stressed by several participants:

*Many solutions based on disability would also be quite good for so called healthy people, but those made for the healthy are not suitable for the disabled. [...] We all get older and can any day become incapable in some way. (U28)*

Indeed, the demand for accessibility came up when non-disabled users were planning their housing career forward. Some middle-aged participants in particular were contemplating the eventual impact of own ageing to the usability of their dwelling. They had begun to critically assess the capability of their current dwelling to accommodate lowered physical ability anticipated in old age. Those living in multi-level flats, for instance, were worried about the design of their flat becoming a concrete barrier in the future (U30, U33). A man's evaluation of the accessibility of his terraced house flat here is epitomised to the stairs:

*As yet, the stairs do, but when you get older they will become too much. Or if something happens so that you get a cast on the leg, then it's difficult to use stairs. Stairs are always bad. Carrying things up and down is inconvenient and risky. (U30)*

A cast on her leg had made a single woman in her fifties realise the difficulties of living in her house with lowered mobility (U26). On the building level, elevator was seen by her and other participants approaching seniority as important enabler of independent living. The accessibility assessments made by users illustrate how the present dwelling artefact can act as mirror against which future needs are reflected, helping the user to plan and prepare for changes in advance.

#### CONTESTED FUNCTIONS

Both some of the most positive and the most negative user evaluations in my material culminate to one designable element of the dwelling product, the sauna. A sauna is arguably one of the few components in the streamlined mainstream dwelling product that the users find possible to contest. Their attitudes towards sauna tell about negotiation of the space and functions of dwelling, and question the cultural homogeneity of Finnish housing. Sauna has always been part of urban housing in Finland. As a component, it has gradually migrated from the area level via house level to the level of individual dwelling. Historically, there were public saunas in cities that the local residents used. During the standardisation period, a joint sauna in each housing company became the rule. The suburban rental houses among my material all but one have this type of sauna. From the 1980s on, apartment saunas begun to replace joint saunas in blocks of flats and have since become a standard in free-market housing production. A private sauna in the Finnish housing culture signifies good standard of living and distinguishes higher-end owner-occupied housing from other housing which less often has such feature. Lately, however, ecological awareness has begun to counteract the building of apartment saunas.

Four of the participants had no sauna. 22 had a joint sauna in their house to which they typically could reserve a regular weekly shift. Half of them appreciated the joint sauna, while the rest either did not mention the sauna, did not use it, or disliked using it. 12 of the users with access to joint sauna or without a sauna would have wanted their own sauna although some at the same time deemed it too costly for them (U20, U22). 18 participants including all in the elite group had a private sauna in their flat. All but three of them considered it an essential feature. In the material, a sauna comes up as having high experiential value to many but at the same time as a controversial feature that divides opinions. Many users proclaimed themselves either as “sauna persons” or “not sauna persons”.

*Sauna for me is automatic, I have a sauna in every dwelling.  
If there wasn't one, I've had it built. (U42)*

*Let its name be sauna but for me it's a walk-in closet. (U26)*

*A typical customer comment we get is: 'We wouldn't really  
need a sauna' – 'Great, let's leave the sauna out, would you  
like a walk-in closet instead?' – 'Oh no, best to leave the  
sauna there so it will be easier to sell'. (C1)*

A wealth of meanings is invested by users to this one designable element. Private sauna especially for the elite group was a self-evident standard component in a dwelling, "a comfort factor that you can't manage without" (U36). It was also thought to ensure the resale value of dwelling. The value of sauna in everyday living was connected to pleasure, relaxation, and soothing the mind. For many, going to sauna was the best moment during the week. The middle-aged men in particular used sauna as a way to relax and switch from work mode to leisure mode. Sauna also has social meanings. The users who stressed not needing a sauna considered it a useless element that consumes space and increases the cost of living and energy consumption (U25, U27). Those who nevertheless had a sauna used it for storing clothes or dog food (U26, U34). An immigrant woman perceived the sauna in her flat as a foreign cultural feature that just increases the rent (U6). Own sauna had originally enticed a user to her present flat, but changes to physical ability had diminished its use and value to her even if the sauna had been modified to suit her special needs (U28). Regarding joint saunas, the male members of an immigrant family had found the common sauna shift a good opportunity to get to know their native Finnish neighbours, whereas another immigrant family had experienced difficulties in cancelling the unwanted sauna shift automatically assigned to them by the landlord. One inner-city resident valued the urban tradition of communal saunas (U40).

Sauna plays a part in people's negotiation about the space of their dwelling both in the market and during use. For sauna enthusiasts, it can be a key criterion in housing choices. Those with neutral or negative attitude need to weigh whether they are able or willing to pay for the space taken by it. Some participants had ideas of replacing their sauna with other function, such as workspace or walk-in closet, but cumbersomeness of the task and consideration of resale value discouraged them from doing so. The high status of sauna in the Finnish housing ideal despite its low personal value and need for economic rationalisation affected this woman's decisions:

*Not having a sauna occasionally bothers me despite that when I had one, I only used it a couple of times a year. I once counted that if I would move into a bigger flat in the same building with a sauna, the sauna would cost me 50 euros per month. Compared to 8 euros per month [the cost of a weekly sauna shift] that's not very attractive. Also my need for space is greater than the need for a sauna, and sauna consumes space. Eventually though, when buying my own flat, I would like to have a sauna. (U31)*

The talk about sauna renders visible the contradiction between use value and market value in the physical dwelling product and how users are seeking to balance between the two (cf. Brand 1994, 73). It can be added that in the company interviews, the requirement of building a parking slot for each dwelling came up as similarly contested function that at present is demanded by regulations even if it increases the price of dwellings and may not be needed by many residents in inner-city urban areas (C2).

#### “ONE EXTRA ROOM”

Almost a quarter of the participants (10) wished for one more room to their dwelling. In some cases the need was quantitative (an own room for each family member), which tells about confinement of present dwelling due to family changes. Some users would have wanted a spare room to be used as home office and/or guestroom (U12, U28, U34). However, several users expressed the need for reserve space in their dwelling with unspecified, open use (U23, U25, U26, U27). Such extra space they would use for hobbies, handicrafts, tinkering, workout, storing tools or hobby equipment, and all kinds of other activities that need space and involve temporary laying out of things. What they basically wished for was a spare room that could flexibly accommodate changing uses and be closed off from the primary living space when not in use, without the need to tidy everything up. In detached houses, the cellar or garage may serve a similar function. Such durable and multifunctional “low road” spaces, to use Stewart Brand’s term, seem not to be available in urban housing types. One participant (U26) was using her balcony for this purpose in the summer. A participant who had this kind of extra room in the terraced house flat where she was living on her own found it very important:

*The room resembles a workshop with a combination of uses. It acts as my home office but is also a TV room, guest room, library and hobby room. Sometimes there's a knitting*

*machine lying around, sometimes I use my exercise bike in there or roll out a gym mat on the floor. It's like this multi-use dump ['monitoimimörskä']. (U2)*

The wish for extra space with open use (cf. Hill's [2003] idea of spatial redundancy and Hertzberger's [2005] notion of polyvalence) reveals shortcomings in the standard urban dwelling. The dominant dwelling design, based on predefined functions each with their own precisely tailored space, has low tolerance to other, changing uses. Urban blocks of flats lack a spatial reserve that would enable flexible expansion and subtraction of dwelling space as demands fluctuate. A balcony to some extent can serve this need. The question of extra space is evidently also an economic one. Above, the need for space was met by simply purchasing a flat with one more bedroom than is needed. This solution is unattainable to many in larger cities. Less vital needs that fall outside the basic functions of dwelling and are poorly taken into account by housing design are easily sacrificed when people negotiate about expensive square metres. Economic reasoning and attachment to her present flat restrained this woman's willingness to pursue her wish for extra space:

*I would like that one extra room but then again, I don't know if I could really afford it. When I also fit in here. And on the other hand I have made this place [look like mine]. There begins to be a lot of emotions attached to this flat. (U26)*

The user study suggests that regardless of eventual differentiation of lifestyles or individualisation of the society, there is diversity in user needs concerning components of the dwelling product that challenges the dominant design in mainstream housing production. The study also indicates that residents actively weigh the value of dwelling attributes to themselves as they negotiate in the housing market.

#### 5 . 4

### Users' strategies for seeking fit

I will now examine more closely the ways in which users seek to adapt the dwelling product to their purposes. Along the lines of Brand (1994), dwelling adaptation is seen as reciprocal



process where the dwelling and the resident “shape themselves to each other” until a satisfactory fit is achieved. My objective is to shed light on the exact strategies and tactics by which dwellings delivered by the industrial production system are appropriated by residents, made to fit their lives, and in this way gradually become an *oeuvre*. I will first analyse the users’ adaptive strategies targeting various levels of the dwelling product as they were manifested in the interviews (Chapter 5.4.1). After that, I will discuss the impact of precedent reference designs to housing preferences and user experiences of housing (Chapter 5.4.2). I will then open up some key constraining factors and experiences during housing career that had influenced the participants’ housing decisions and perceptions of dwelling features (Chapter 5.4.3).

#### 5.4.1

#### ADAPTIVE STRATEGIES

The material displays a variety of strategies that the participants had employed when seeking for fit in their dwelling. They range from immaterial to profoundly material and target different levels and physical parts of the dwelling product. They reveal occurrences of passive, reactive and creative use (Hill 2003) and shed light on the practices of doing, adapting, making and creating in the domestic sphere (Sanders & Stappers 2008). The types and extent of the strategies mentioned by participants on levels of the dwelling product is depicted in Figure 44. The strategies will be presented beginning from the surface of the dwelling product and extending deeper into the built hierarchy. They form an approximate sequence from “weak” (temporary, materially superficial; think of de Certeau’s tactics) to “strong” (long-lasting, materially deep). Economic strategies addressing the ownership and financing of housing, and social strategies related to neighbours and the local community are discussed separately. Obvious strategies in the housing market taking place before purchase and having no impact to the material dwelling product, such as browsing, searching and selecting among the local offering based on preferences and constraining criteria, are not included in the examination.

#### IMMATERIAL STRATEGIES

There are individuals in the study who seem to have a primarily passive relationship with their dwelling. The account of a young man recently moved to Helsinki because of work reflects a feeling of impermanence and disinterest towards his own dwelling:

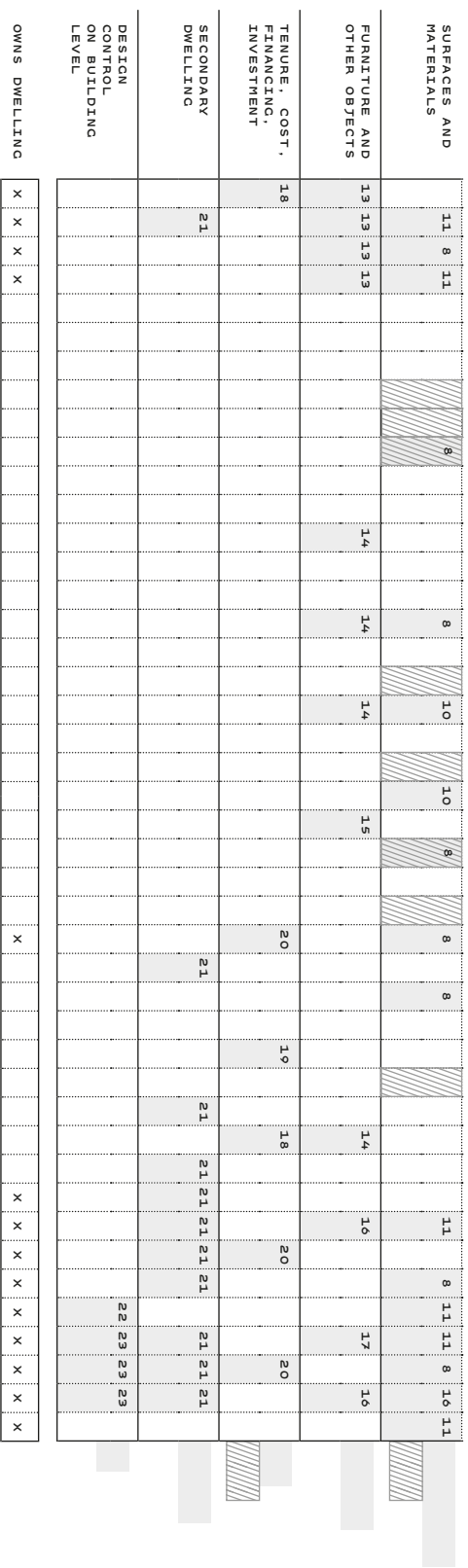


FIGURE 44.  
The types and extent of adaptive strategies mentioned by participants on levels of the dwelling product. Immaterial strategies are not shown. Grey area indicates a realised strategy and lined area an unrealised or planned strategy.

- (1) Renting an allotment,

(2) Initiative to get a forest thinned,

(3) Neighbour help,

(4) Activism in housing company or residents' committee,

(5) Tending the common areas,

(6) Purchasing two parking slots,

(7) Accessibility modifications subsidised by the city,

(8) Do-it-yourself or self-contracted home improvement,

(9) Combination of adjacent flats,

(10) Improvement paid by landlord,

(11) Customisation service after purchase,
- (12) Upgrading the technical equipment

(13) Personalised assistive products,

(14) Home decoration as means of personalisation,

(15) Subdivision of space by furniture,

(16) Professional interior design,

(17) Changing all objects when moving,

(18) Sharing dwelling to reduce costs,

(19) Right-of-occupancy as springboard to ownership,

(20) Housing as investment,

(21) Secondary dwelling,

(22) Acting as architect of own block of flats,

(23) Hiring an architect, co-design,



*This is quite unlike a flat where I would want to live in. It doesn't look like me. It just looks like a place with cheap furniture got at some point that has followed along for years. (U25)*

The same person was involved in hobbies and social activities outside his home and was actively exploring the city by car in his free time. Passivity regarding the use and adaptation of one's dwelling does not necessarily extend to other areas of living and may be explained by age, family situation and tenure (renting). Hardships in life had made some participants concentrate on personal survival and directed their attention away from the material environment (U6). A "passive" user could also simply be contented with her dwelling (U15) or less interested in material values. Passive use as such should not be seen as a negative trait. The activeness of their use also does not correlate with the importance or meaning of objects in the domestic sphere (Paavilainen 2013, 158). Moreover, the user study method somewhat overlooked common strategies on the object level such as home furnishing and decoration.

Several participants' (more often non-owners') relationship to their dwelling was characterised by *making do* – adapting oneself to the dwelling as it is despite possible mismatches (U6, U8, U21, U25). These persons had more or less intentionally "settled with what they've got" and attuned their everyday living and expectation level along the existing environment. They did not find a pressing need to alter anything particular in their dwelling or else lacked permission, resources or skills to do so.

*Previously, I couldn't have imagined that I would adapt to living in a block of flats. When it's a forced choice, you just get used to it. [...] I guess I'm easily contented. After a flat has become a home I can't really think of it [as lacking something]. Of course, if I would own the flat I would probably perceive it differently and have more of a need to improve it. When you are renting, you are sort of prepared to settle with what you get. (U21)*

Making do as a strategy is arguably employed by most people considering some features in their living environment. Being able to loosen up on the quest for congruence of every attribute of the dwelling product helps in managing the unavoidable mismatches in real-life dwelling. Minor defects in dwelling can be endured if the overall dwelling product meets its purpose. People's tendency to get used to



FIGURE 45.

Photographs depicting some of the adaptive strategies of users. From top row left: Masking defects by decoration (sheet metal walled bathroom element, U13); subdivision of space by pieces of furniture (music corner, U23); custom-made fixed furniture (cutlery cabinet, U43); upgrading the technical equipment (air conditioning, U2, and laundry tower in hallway, U17); co-created accessible kitchen (U1); self-made accessible doorsteps of oak (U4); renovation of surfaces to match own taste (U27).

their dwelling, learn to overlook its downsides, and find ways to bypass them in everyday living lessens the importance of complete user-specificity in dwelling design. Much of users' adaptation to dwelling seems inherent, unproblematic.

Creative (mis)use of the dwelling is another type of immaterial user strategy that came up in the interviews (cf. Hill 2003). The dwelling space or some of its parts could be used in unconventional or unintended ways. Examples of physical creativity are the already mentioned cases where sauna was used as walk-in closet and for storing dog food. Bodily or conceptually creative use did not noteworthyly surface in the material, perhaps because the study method emphasised the physical dwelling artefact.

#### OBJECT STRATEGIES

Personalisation of the dwelling interior by pieces of furniture and domestic objects serving functional and aesthetic ends represents an obvious strategy on the object level that all users in control of their dwelling employ. The furnishings and interior decoration of a dwelling express its residents' individual taste and identity, personal history and social status. This is the level that users can easily and rapidly modify and as such relatively unproblematic considering the realisation of user value. I will therefore not delve much deeper into this topic. Heidi Paavilainen (2013) has researched the practices by which design objects are domesticated in Finnish homes. Her study shows that people have different styles of dealing with objects in their home as well as different attitudes towards them. People also invest different amounts of money and time into the management of their home interior.

The object level was highlighted in some of my interviews. Assistive products were an essential part of living for the users with disabilities. Many had personalised mainstream products to match their individual needs and aesthetic preferences. An example of a creative user who employed a product-based strategy outside of dwelling for increasing her feeling of social belonging is provided by a young woman who is short in stature (U3). She had adopted a trendy scooter instead of a rollator as assistive product that enabled her to be perceived as a regular sporty person when moving outside and thus helped in managing the stigma related to disability.

Young female renters especially brought up the importance of interior decoration as means of personalisation (U12, U13, U14, U16), this evidently being the only personalisation strategy that is available to them. Apart from aesthetic and functional personalisation (making the home

“look like ours”), objects were used for masking defects and misfits on other levels of dwelling, such as an ugly radiator or the sheet metal walls in an element bathroom. One interviewee had made the uniform entrance in her terraced house flat stand out by embellishing it with plants and decorative elements (U34). In confined dwellings, the living space could have been subdivided into functional areas by pieces of furniture or other lightweight, remountable structures. For example, one user had separated distinct areas for music, work and laundry care in her dwelling (U23). This kind of rearrangement of space by means of objects is yet another strategy that requires physical creativity. Strategies on the object level were also emphasised in the elite group. Some had renewed most of their furniture at every removal and were using the services of professional interior designers. Others stressed that objects in a home should never be bought at once but reflect the residents’ personality and family history (U40).

An interesting strategy on the level of technology that quite many participants had resorted to was upgrading the technical standard of their dwelling by themselves. They had accessorised the existing dwelling with extra appliances or embedded technology with the intention of enhancing its everyday performance and increasing the comfort and safety of living. The upgrades by users range from a security phone (U1) to installing a dishwasher or washing tower (in the hallway, U17) and to solutions penetrating the surface of the dwelling such as air conditioning (U2) or home automation system (U42). In the 1970s housing estates, add-ons were justified by the basic technical equipment of the dwellings, perceived by many as outdated. Downgrading or simplification as strategies are not present in the material. However, some users had abstained from upgrades because “comfort has a price tag” (U19).

#### STRATEGIES IMPACTING THE BUILT FORM

Customisation service provided by the producer is the first point at which free-market owner-occupied dwellings are manipulated by users. This is typically made possible by delayed differentiation relying on some product modularity that allows the customer choices among pre-designed fit-out options plus additional modifications at a separate price (see Chapter 4.4.2). Customisation service before move-in had been used by at least six participants and had significantly increased the experienced value of their dwelling. However, some in the elite group were unsatisfied with the variety of the predefined fit-out assortment offered to them.



*[I like this dwelling most] because I could move into a brand new one without traces of anyone else, and was really able to make choices about the floor plan and such. All my previous dwellings have had something I would have done differently, had I been able to decide myself. I would not have built like this or furnished like that or selected those colours or surface materials. (U2)*

*This flat is our own so we have been able to decide everything ourselves. That gives you courage to invest in it and put yourself at stake. You are able to choose the materials and paint the walls freely and don't need to restore them to the original colour if you don't feel like that. We could select the cabinets and everything exactly according to our preferences. In addition to [aesthetic] modifications paid by ourselves, I was able to order functional modifications necessitated by my disability. (U4)*

*Interior design is the most interesting and fun part of the process. Since the floor plan was quite functional, we ordered just a few modifications to the flat itself. One doorway was blocked and we selected the fixed furnishings and surface materials. (U43)*

Publicly subsidised functional modifications to the dwellings of persons with disabilities and seniors are another route leading to personalised dwellings. The resident's active role in ideating these modifications and getting them realised is crucial, as suitable and aesthetically satisfactory ready-made solutions can be hard to find. Modifications of this type range from supporting handles, widened doorways and lowered doorsteps to electronically adjustable kitchen cabinetry and automatic entrance doors. A few users with disabilities had come up with own design ideas and realised them in collaboration with small manufacturers despite initial challenges. A prime example is the kitchen renewal project of a woman who is short in stature:

*I found one [kitchen furnishings company] on the Internet specialised in people with special needs. The guy who came here was so full of what disabled people should have. I told him, please, there's the door. I don't like the fact that so called accessible solutions often look somehow disabled. [...] There should be aesthetic values as well. (U1)*



She then found a small kitchen manufacturer with no previous experience in accessible kitchens but willingness to co-create:

*He said that they don't know anything [about accessibility]. [I thought that] perhaps it's only good. Because my hands are bad, I wanted a dish draining closet with as few doors as possible. He designed it much prettier and nicer than I would have thought of. [...] So we just envisioned it. As the modifications were partially paid by the city, a master builder from there also came by. He added some really good details that I hadn't realised myself, like the waste bin that is usable with a wheelchair and rollator. There are some other gimmicks too that make the kitchen look less disabled. If I will need to use a wheelchair, some work surfaces can be moved to another wall. The kitchen transforms according to the stage I'm in. That was something I also wanted.*

At worst, a very specifically tailored dwelling can become a barrier to the next resident. At best, the resident is able to build upon modifications made by previous users, as in this case where the user benefited from moving into a house built for war veterans. In any case, it seems that investing creativity into a dwelling and self-designed features increase long-term commitment to it:

*I have decided to live here until I die or am not able to live on my own anymore. During the years, the flat has been modified in many ways. The [accessible, self-designed] kitchen is brand new, built less than a year ago. The balcony has been made [accessible]. And the original reason for buying this flat was that the previous resident had made the bathroom accessible.*

In rental and right-of-occupancy housing, renovations and repair work realised by the owner typically in conjunction removal present a third type of opportunity for users to adapt their dwelling according to their preferences. These renovations mostly limit to basic updating of wall surfaces, flooring and fixed furniture. Many rental and especially right-of-occupancy residents had also modified their dwellings during use at own initiative and cost. In vvo houses, the residents had been provided renovation kits by the landlord that included materials and tools for do-it-yourself painting. Being allowed to paint the walls of their flat with colours that match their own style had been enough to make many users very satisfied with their home:

*When I signed the lease the walls were just going to be repainted by the landlord in conjunction of other repair work. I was told that I could choose the colours myself as long as they weren't too garish. The other rooms were painted by the landlord [using the colours that I had chosen]. The kitchen wall I painted and paid for myself because I didn't dare to ask for pink paint. (U19)*

*When the flat was painted and everything fixed I really felt that this was my home. I thought that I will not move away any time soon. [...] This has felt like a home since the beginning. (U22)*

Several renters put forth that allowing more extensive personalisation of a rental flat would increase its user value, lengthen the duration of residence, and heighten the social status of the housing form. Apart from painting walls, installation of floor laminate and removal of minor walls are examples of changes that renters would have wanted to make into their flats by themselves. The plastic flooring that is a standard in older low-end housing was perceived by users as an outdated feature that negatively distinguishes rental housing from other housing production. As expressed by the shift-working youth leader met earlier (U13),

*It would be lovely to be able to modify your dwelling according to your own preferences. If I would own this place I would take the wall between kitchen and living room down to make the space more open. In a rental flat what you can realistically do is limited to furnishing. Being able to bring anything personal to the flat makes it much more pleasant.*

*The Finnish culture is all about the owner-occupied dwelling in the terraced house and the housing loan. Rental housing is not considered a real alternative. It's funny for instance that you are not allowed to install floor laminate into these flats. I understand the point that some people have done it improperly so that it has had to be removed. But if someone is planning to stay in the flat and wants to make it better to enhance her living. [That could make] rental housing more realistic alternative, not just a place where you stay until you have managed to save enough for a housing loan.*

This kind of unfulfilled or merely planned adaptation strategies were common especially among non-owners. 17 participants would have wanted to manipulate some element in their dwelling, had they been in control

of its deeper levels or had the means or skills. Some had envisioned the desired changes to spatial organisation, materials, furniture or equipment in detail. Others may have been unsatisfied with certain features in their dwelling but did not have a specific solution in mind. One future Eiranranta resident would have wished to participate in the design of the common yard (U44). It seems that ideating changes to one's dwelling is also something that people entertain themselves with. The ideas are not necessarily striven to be fulfilled. Temporary residenceship and lack of ownership clearly diminished the motivation to dwelling adaptation (U23, U25). Nevertheless, the user study indicates that regardless of tenure form, the majority of residents highly valued the possibility to personalise their dwelling.

The strategies discussed so far were made possible and to a large degree controlled by the producer, the landlord or a public authority. During the life cycle of a dwelling they are complemented by strategies initiated and paid for by the residents themselves that mix "reality-based" adaptation related to functional needs and upkeep of the dwelling with "fantasy-based" adaptation driven by lifestyles and fashion (cf. Brand 1994). Do-it-yourself home improvement and home improvement with the help of professionals are effective strategies whereby the user can rather directly manipulate several levels of the dwelling product, including the partitioning and technology. 11 interviewees had employed this strategy in their present dwelling. One of them (U27) described herself as "serial renovator" who has "all the time a renovation planned or ongoing". This had also motivated her housing choices:

*The overall feeling is the most important factor because almost everything else in a flat is changeable. I can renovate it according to my preferences so such things don't matter. I'm not put off if the kitchen was painted orange in 1961. It's primarily about sensing the spirit of the flat – whether it's potential for me or not in some inexplicable way. [...] The feeling comes straight away when I step in. This flat for instance looked totally different from what it is now, and yet the first impression when I was standing in the hallway was so positive that I wanted to inspect it more closely.*

She had learned her do-it-yourself skills from her "extremely handy" father whom she had followed around asking questions about work phases and tools. She spoke for creative hands-on trying out of things with the dwelling artefact:

*I've learned since childhood that there's a lot you can do yourself at home, I don't consider it as anything strange. You need to try things out. If you realise that you don't know how to grout a wall you just need to get help, these things are quite remediable. Also you shouldn't take renovation too seriously. [...] This is a hobby as well.*

Another participant stated renovation as her hobby, too. Her refurbishments due to more money and near-professional contracting skills extended deeper into the dwelling product. She had for instance realised privately a dwelling-specific plumbing renovation. She had also upgraded the technology in her new Eiranranta flat by installing an advanced home automation system.

*I do a lot of renovating and building myself, it's like a hobby. I know quite much about it as well. I mostly contract the work. My own contribution is limited to occasionally working on the surfaces. I like to plan and coordinate building projects. [...] I have completely refurbished all my dwellings. Their original condition has been very bad, so I've had to renovate electricity, plumbing and all surfaces. This has been done with respect to the old buildings. In my previous flat I had a massive renovation made that included changing all the plumbing separately for this one flat to avoid the need for plumbing renovation in the future. (U42)*

Three participants had acted as constructors of an own house during their housing career (U41, U42, U43). Two of them had initiated the building of a terraced house with several dwellings together with other families. The projects had involved close collaboration with the architect. The other family had hired the same architect also later for designing their one-family house:

*We have participated in the design of all our dwellings. We have a local architect here who designed the refurbishment of our old house, the three-family terraced house that we built after that, and our present one-family house. (U43)*

As a strategy targeting the quantity of space, a couple had combined two adjacent flats in Eiranranta into one (U41). These examples illustrate relatively “deep” user strategies that require manipulation of several levels in built environment and collaboration with architects and builders. There are no occurrences in the user data of co-design in the

scale of urban housing. The user-creators of the Loppukiri house thus represent the most “in-depth” user strategy in the dissertation. There remains to be mentioned one rather exceptional strategy, followed by a couple who had several times constructed their entire home from the scratch. The reader may contemplate whether it reflects detachment from material values or is an ultimate manifestation of consumer culture in housing:

*We have moved many times. The last two homes we sold with all the furniture. Everything has changed, which is not that common in Finland yet. You might ask how I can abandon my home. But small things that make up the home like photos and paintings won't go of course, those I carry with me everywhere. Why cling to the leg of a chair when you have to let people go? [...] For me, home is about building a nest. The nest just always looks different. We have built a place for ourselves from the scratch many times anew. It's important that we both feel comfortable in the nest, but objects are not something to hang onto, we can just as well enjoy a beautiful and comfortable space. In life, you have to be able to give up everything. (U41)*

#### STRATEGIES OF OWNERSHIP

Several strategies related to the economic aspect of dwelling were mentioned by the interviewees. One had occasionally been renting out the bedroom of her flat in order to reduce her cost of living (U1). Another had managed to access a large right-of-occupancy dwelling in a terraced house by teaming up with her former partner. She explains her unconventional strategy:

*My ex-husband with whom I was still in good terms told me that he was thinking of getting a [right-of-occupancy] dwelling because his rent was going up and there were big renovations coming. But all the flats are so big, there weren't really any studios or one bedroom flats available. Then I got this killer idea that why wouldn't we two poor people, who anyway are friends and get along consider sharing a flat. You know, I would live in one room and he in the other. He said that he will need to think about it. The next day he called and asked me to come see this place with him. We thought that this would be a temporary solution for a couple of years. Now we have lived in here for six years, like a sister and brother, enjoying it and wondering that how on earth did this happen [laughs]. [...] He travels a lot for work so I also get to live here alone at times. (U34)*

Some users stated economic reasons for choosing a certain tenure form. In general, most renters, circumstances permitting, would have opted for an owner-occupied dwelling. A few, however, preferred renting because of its economic carelessness (e.g. 022). One person saw right-of-occupancy housing as a suitable tenure form for her at this stage of her housing career because when paying off the loan taken for the right-of-occupancy fee she was automatically forced to save capital for an owner-occupied dwelling (031). The Eiranranta group in general saw their purchase as a good investment, the value of which was expected to rise in the future. The economic asset value of dwelling was especially highlighted in the stories of the two homeowners who had renovation as a hobby. One of them (027) had since youth been following an intentional long-term strategy of buying, renovating and selling her flat at a profit, in this way gradually enhancing her living standard. The series of renovations had given her craft skills and experience that she was making use of in subsequent projects. The other person with private wealth had gradually acquired a portfolio of real estate property, some intended as her own dwelling and others as investment. She as well had added on the value of her property by letting completely renovate several of the flats. She now had a collection of dwellings to choose from:

*I have been really lucky with my real estate deals, not having to suffer from market crashes and managing to trade in during economic booms. Our present dwelling is inherited from my father. At the moment we are pondering whether to stay in here, move back into our old flat, which is currently rented out, or move into the new one in Eiranranta. So there are too many options at the moment. Apart from these three large flats I own several others bought as investment. (042)*

Acquiring a second dwelling is an effective strategy to expand the space and experiential variety of living. This strategy seemed not to be available for the vvo tenants, none of whom mentioned a secondary dwelling such as summer cottage. 11 participants, including most members of the elite group, owned a leisure home in Finland. Five of them even had a second or third vacation home which typically was abroad. Some other users had access to vacation houses of relatives or employers. The freedom and change of environment offered by a secondary dwelling was greatly valued by the users. They appreciated the combination of a summer cottage amidst the nature or an old farmhouse in the countryside and a comfortable

city flat in lively urban environment. One couple had purchased the flat in Helsinki as a *pied-à-terre*, retaining their house in another town as primary residence (U43). A person with such deep and powerful strategies at her disposal can afford certain nonchalance regarding the importance of housing:

*The inner city dwelling, the country dwelling and occasionally the dwelling abroad make up the framework for my living. But that's really just rather superficial. What my living actually consists of is a totally different story. (U36)*

#### SOCIAL STRATEGIES

The participants employed various inclusive and exclusive strategies for controlling privacy and social relations and for managing common issues on the levels of house and neighbourhood. The users' social strategies can be divided into three main types that roughly correspond with the type of environment that they were living in. The inhabitants of suburban housing estates more often than others had conflicts with their neighbours. Social problems invaded their everyday living in the form of noise, breakage and other disturbances that they had little opportunities to escape. Most had chosen a strategy of quiet endurance rather than confronting the perpetrators or trying to change the situation through official channels. Lack of social belonging and interaction among residents were also identified as problems in suburban rental blocks of flats, although many users had positive experiences of their neighbours, too.

*The flat itself is not that important. I would like to live in a place where children would play together and people would talk to each other and say hello, not just look away. And where you could sometimes go swimming or have a coffee with some neighbours or invite them to your place to eat. (U8)*

By contrast, social relations among people living in terraced or semi-detached houses were characterised by more communality. Their central strategy can be described as forming alliances. They had sought membership in informal and formal groups within the community that granted them some control over the environment and some decision-making power. Several participants held positions of trust in their housing company or residents' committee which provided a channel for their social activism. Informal social interaction, such as chatting with neighbours or spending leisure time together with them in the yard, was more common in this group. Several



participants were tending the yard in their house on their own or together with other residents. Mutual neighbour help such as babysitting or watering plants during holiday was a further benefit from bonding with neighbours. The following quotes show examples of social control on the shared levels of the dwelling product based on common agreement:

*Our area is very cosy. It's like a small enclosed village with fences, gates and village roads. There's a lot of greenery and we have some farming allotments. And there are many children playing traditional games like 'church mouse' or 'ten sticks on a board'. We have intentionally taught them those games that nobody plays anymore. The children can move around safely because we insist on not allowing driving or parking in the yard. (U32)*

*The original residents who moved into this house made a decision together not to nag about small matters and always try to settle things rather than pin complaints on the walls. And so it has remained. It's really nice to live in here and everyone has their own privacy. [...] People keep places tidy and you don't need to get annoyed about rubbish lying around. (U15)*

The data also comprises practical everyday strategies by which people were seeking to maintain personal social relations. As with the dwelling attributes, users' strategies make use of multiple levels of the dwelling product. For example, the social interaction strategy of an elderly woman (U24) consisted of a daily visit to the mall, coffee in a nearby café run by the local congregation, time in the house clubroom with other residents doing handicrafts, membership in the house committee with guiding new residents as her special role, and Skype connection with 3–4 friends every night to solve quizzes, sing karaoke and comment on TV shows. Regarding the living area, owning a dog is a typical "strategy" that had enabled people to familiarise with their neighbourhood and get to know other local residents. Repetitive use of an area by walking, jogging or bicycling leads to it becoming personally meaningful:

*We have given names to our regular walking routes. There's the Bun Shop Route, the Half Bun Shop, the Somali Route and the Centre Route. When we go walking the dogs I can say, 'Let's take the Centre Route today'. (U34)*



Participation can even increase the “mineness” of public space. After getting a small forest near her home thinned by the city park department at her initiative, the same person felt proud and jokingly proprietary when meeting other people who begun to frequent the area: “This is *my* forest, I have got it into shape! Just move over, *I’m* walking my dogs in here now! [laughs]”.

Finally, the principal strategy of people living in high-end inner-city owner-occupied flats or in detached houses was that of subtle exclusion. They reported neither conflicts with neighbours, nor special contacts with them beyond the regular greetings and housing company meetings. A man living in a block of flats noted that he only met neighbours in passing in the parking hall; otherwise he felt like living in a detached house (U39). The elite stressed the egalitarian nature of Finnish housing and spoke against social segregation. However, they had, intentionally or not, employed subtle strategies that granted them privacy and distantiation from others. This could be through choice of area, physical means (new house with good sound insulation and private parking hall), or technology (security system). The sole user who had taken more drastic measures in retrospect considered some of them exaggerated:

*The feeling of safety is individual, everyone sets their borders themselves. Of course we have security systems installed in every place, but that’s also because they lower the insurance payments. [In the previous house] we had these panic buttons that you can push to shut down some things and the police will come immediately. That’s pretty American I guess. (U41)*

#### THE DWELLING PRODUCT AS MEETING POINT OF USERS’ STRATEGIES

To sum up, each individual dwelling artefact can be seen as a physical platform where strategies of users, producers and authorities conjoin, interact and build upon each other in time. In the beginning of its life cycle, the dwelling is in control of the producer, who determines the ways in which it can be customised by the first user. Before that, the form of the dwelling has already become to embody the strategies of designers and others professionals in the housing regime. As the dwelling becomes inhabited and begins to be used, control shifts to the resident (and the housing company). Corporate strategies give way to private strategies of variable material depth that aim at adapting the dwelling to the needs and preferences of the particular user and in this way increasing its user

value. Changes to the dwelling involve networks of yet other producers and experts. At the same time, the easily adaptable finishing layer of objects gives the user leverage for fitting the closest environment to her needs. When dwellings age, they continue to evolve. Their components are repaired and replaced on functional and aesthetic grounds. Originally uniform flats in a building each embark on an individual career of adaptations, the course of which is set by the succession of users with their individual characteristics, resources and skills. Users' strategies in this way contribute to diversification of housing.

My study demonstrates that the relationship of the adaptive strategies of users to the material dwelling product can be additive or subtractive. Users upgrade or add upon the existing dwelling product or simplify it by removing less valuable elements. They can employ an expansive strategy in the housing market (an extra room, combination of flats, secondary dwelling) or seek to optimise the elements and use of dwelling within given constraints. Users combine long-term strategies (kitchen renovation) with short-term tactics (misuse of the sauna). Some have more adaptation skills, developed through hands-on experience.

#### 5 . 4 . 2

#### MATERIAL REFLECTIONS

I will next present some findings about the role of exemplary dwelling products in housing careers and user experiences of housing. The user study demonstrates that valuable features of dwellings seen and used by people previously can be adopted as real-life design references to which other dwelling designs are compared. The existing dwelling stock as a whole also provides material for planning and dreaming about dwelling. Intimate memories of the home, learning from one's own past dwellings, observing the built environment and how others live, and model designs in the market and media in this way influence people's experiences and strategies of dwelling. This brings us back to the aestheticisation of housing consumption. It also renders visible some of the processes by which users transmit design increments within the evolution of housing.

#### THE IDEA OF NORMALITY

The perception of a "normal" housing career frequently came up when people were talking about their housing histories. The participants often were reflecting their housing choices and experiences to the (imagined) actions of other people and seemed to be well aware of the social expectations connected to various ways and forms of dwelling. Following what peers in

a similar life situation or social group are thought to be doing was used as partial justification for own choices or as sort of consolation that helped in accepting the downsides resulting from them – “we are not the only people going through this”.

*This so-called married life phase I think was rather standard living, just like with everyone else. The history is quite similar as well, moving to a suburb so as to get more square metres with less money. As a downside you get hellish commuting, eternal darkness and never time to do anything. And I don't necessarily consider myself a suburban person. I didn't really get to know anyone during my almost fifteen years in Martinlaakso [a high-rise suburb in Vantaa]. (U26)*

Discussions about housing dreams and desires also reveal perceptions of normality. When asked about his housing dreams, a young single man responded, “Am I now supposed to say wife, two children, a Volvo estate car and a dog?” (U25). Even if such comments would be presented half jokingly, they illustrate how “normal” housing ideals interfere with people’s assessment of their personal housing preferences and choices. A customary housing career in the interviews of the homeowners typically meant continuous, gradual increase of living standard (the size and quality of dwelling) until the moving out of children or seniority, at which stage it is permissible to change into a smaller, yet comfortable dwelling. Their quest for conformity with social expectations via housing could provide the users satisfaction and feeling of achievement but also become a source of some anxiety. A woman belonging to the elite group almost apologetically reported her failure in following what she thought is a normal housing career:

*The beginning [of my housing career] was normal, changing to bigger like normal people. But then when life has started going... life hasn't been quite as [laughs]... steady as with regular people, so the dwellings have become smaller again. (U37)*

The same person, on the other hand, stressed the individuality of her taste and lifestyle in comparison to her neighbours whom she described as “standard families who start talking about Christmas baking in October”, stating that “I will rebel against that kind of things until the grave. No traditions for me.” These incidents open up just some of the sensitivity and complexity around the issue of social comparison and individualisation in housing. Whether a “regular” housing career or way of living is something that one seeks to adhere to or

distantiate from, it seems that socially shared perceptions of normality are something that one cannot avoid relating to during one's housing career. People's choices on different levels of the dwelling product are influenced by simultaneous needs for social conformity and individuality. When they discuss their dwelling strategies they also come to talk about what is normal.

#### DESIGN REFERENCES AND AESTHETIC REFLEXIVITY

I will now look at the role of design and design references in the lives of the users and what they tell of individualisation and aesthetic reflexivity in housing. The material suggest several ways in which other existing housing designs influence people's experience of their dwelling and expectations of the attainable. First of all, memories and reminiscences of past dwellings had an important role in the participants' perceptions. Many of them brought up deeply significant emotional experiences from past homes. Certain house type like the post-war type-planned wooden one-family house could embody a wealth of valuable childhood experiences to a user (U1). The users elicited nostalgic memories from old wooden houses and neighbourhoods that while perhaps lacking by material standards had been socially and experientially very satisfying (U3, U13, U15, U30, U36). However, some saw it as achievement that they had managed to leave such environments behind and could now seek their housing ideals elsewhere (U23).

The existing built environment offers another source of design references. A user, here sensitised by design education, can observe good design solutions elsewhere and adopt them as a benchmarks against which the design of own environment is compared:

*I would like to have a real yard. In some housing complexes the buildings are situated around a central locus that is meant for the children. The idea is good but somehow they miss it. There's only sand, concrete and a couple of shacks where the children can get hurt. [...] There should be grass and benches and alike. These things were taken into account in places like Tapiola [a garden city designed in the 1950s], which is still quite pleasant. You can find paradisiac spots in there. Since then, things have taken a wrong turn. Our small yard is not attractive. It lacks aesthetic qualities. (U9)*

It is difficult to draw definite conclusions about differentiation of lifestyles or aestheticisation of housing consumption from the data. Many differences between users

in relation to the dwelling product would seem to be explained by their socio-economic status, life stage, or special needs impacting the use of dwelling. The users evidently represent different “taste milieus” with typical aesthetic schemata and possess individual attitudes and capabilities regarding dwelling. Aesthetic reflexivity in the meaning of conscious construction of lifestyle by consumption drawing on the imagery of popular mass culture is not evident in the material. However, the talk about design references provides some insights about the role of aesthetic reflection in housing assessment and consumption. The following quote shows how housing dreams are fed by exemplary buildings and the commercial offering presented in media:

*I often go Nordic walking with another mum during our sons' football training. As we tour different residential areas it's always 'Look how wonderful that house is, such a lovely house'. Yesterday for instance we saw many nice houses. We say things like 'Imagine having that kind of house, but by the sea'. I would like to have a big wooden house with bay windows. I already know the specific model [names a house model offered by a prefabricated housing company]. Also I wouldn't mind living some twenty kilometres away at the coast. It would be lovely to be near to the sea. My aunt lives in the archipelago right at the shoreline, which is just 'wow'. But their house is not as fine as the one in my dreams. (U32)*

Housing in other countries as a source of design references also came up. Nine participants had history of living outside of Finland and four had access to secondary homes abroad at the moment. Experiences from the housing cultures of Australia, Canada, Denmark, Japan, Norway, Russia, Spain, Sweden, Thailand, Turkey, Vietnam and USA were related by the participants. Experiences from other housing regimes with different dominant designs than the Finnish one had provided the users housing ideals and concrete design references that they were drawing on when evaluating their present dwelling conditions. This illustrates the aesthetic globalisation of housing consumption. Housing designs are not only objects of local but of global comparison. This was evident in the case of the immigrants, some of whom were exchanging experiences of housing with relatives abroad as part of the decision about where to settle. In general, seeing different ways and forms of dwelling had enriched the users' perception of what is possible and broadened their horizon of expectations. International design references were often brought up when criticising

the local offering. The reminiscences sometimes seem a bit idealised, like this comment by a woman living in a terraced house in Espoo (U5):

*In my husband's home country everyone lives in a detached house. The average size of dwellings is something like 150 square metres. The standard of living is much higher and people have much more space.*

She, an art historian specialised in building preservation, continued her criticism on the mainstream housing production:

*Most terraced houses have been built in the 1980s or after. They are very uniform. There's always living room and kitchen [downstairs], and bedrooms and sauna upstairs. Having seen a few, you know that they all look the same. [...] Architecture and the way of building in Finland are very rigid, new solutions are not sought for even if people's appreciations are changing. What I always stress is changeability of the dwelling according to life phases, such as the possibility to alter room sizes and functions. In these houses it's impossible or seldom considered. It's always the same standard solution that has been used for a long time. If you go to Stockholm for instance, you see much more variation.*

The user maintained that developers just build what they imagine that people are looking after, without real knowledge of user needs, and argued that most people are not used to demanding or have the capacity to demand anything different, so they are forced to settle for what is offered by the producers. Similar criticisms towards the offering of housing were presented by some other interviewees. The architect among them (U40) condemned the prevalent dwelling types in blocks of flats as “tubes” and suggested more vertical designs as means of diversification. “Uninteresting” spatial design and saving in the interior at the cost of “inessential” parts like the building facade were other design defects pinpointed by participants (U25, U26).

Design in the avant-garde meaning or different design professions were almost solely referred to by the elite group. Several of them stated that they like modern housing architecture with clarity and open spaces (U36, U38, U39). They also emphasised personality and distinction from others through home interior and furnishings, as well as the role of artworks in their home and layers of time in the form of old

objects and pieces of furniture (U37, U40, U42). As pointed out, many of them had used the services of architects or interior designers during their housing career. Members of this group showed a marked trust in the expertise and taste of professional designers. They had registered and were appreciating the quality of architectural design in their Eiranranta flats, and despite own modifications basically respected the choices of materials and furniture made by the architect. As expressed by a middle-aged man,

*A good architect understands people's housing needs.  
The floor plan of our new flat is very well designed.  
It's simple and efficient. I don't think that anyone could  
have solved it much better within that space. (U39)*

The same person stands out as particularly aesthetically oriented and with an interest in high-end modern design. His design ideals were largely based on his childhood home, an architect-designed modernist director's villa in a traditional industrial compound with spacious representation rooms, clear division to public, private and service spaces, and exquisite wooden detailing. He emphasised the importance of good quality professional design on all levels of the dwelling product: materials and details, kitchen and bathroom, floor plan, and the building facade. He as sole person in the study took up names of avant-garde architects as well as names of product manufacturers and brands. Aesthetic considerations had also driven his housing consumption:

*The [newly built high-end rental] house in Kaivopuisto where we lived for 12 years was very well designed with wooden details such as balcony doors and window frames. But without proper maintenance they didn't last in the coastal weather and begun to be replaced by hideous looking steel and aluminium parts that spoiled the fine house. If I was the architect I would cry [laughs]. It just changed the overall look and impression of the building, which was miserable. Then of course we were renting, we didn't own the flat. So when we felt that places are just falling apart and there's soot everywhere and nobody's doing anything about it we started looking for a new flat. The difficulty is that when you have lived in such a good location you don't want to settle with much less.*

*We set our eyes on Eiranranta by accident when walking by. We noticed that the houses weren't actually too badly designed. They were quite smart looking and there was*

*plenty of parks and open space around. [...] The other new developments that we went to see in Katajanokka and Lauttasaari were such slums, too densely built. The living spaces were deep and narrow and the kitchens just standard quality, not what you would expect at such high prices.*

There is just one explicit reference to ethically and environmentally aware consumption in the material, also by a future Eiranranta resident. One can speculate whether the theme would have surfaced more prominently if the user study had been conducted some years later. The user stresses the responsibility of designers in making sustainable choices on behalf of the consumer:

*I wanted a dark parquet floor. I didn't know that the merbau wood I chose is so environmentally unfriendly and harmful to the rain forests. My own choice now makes me feel bad. I wish that this kind of aspect would have been considered by the designer when selecting the flooring options. Every time I see the floor I have bad conscience even if I like the look of it. (U44)*

Notably, four interviewees were design professionals, including the art historian (U5), an interior architect (U9), an interior designer and journalist in an interior design magazine (U37), and an architect and lecturer in urban design (U40). One participant was a construction draughtsman (U26), and one had an architect son who had designed her previous house (U41). The architect incidentally was moving into a house designed by himself in Eiranranta. The decision was motivated by an interest to test his own design:

*It's partially about wanting to try out how the flat [designed by ourselves] works. We also knew that the house was made of good quality materials. As its architects we had the possibility to influence some things quite flexibly, even if we had to pay for the modifications just like everyone else. At the least, we know what kind of modifications are possible. (U40)*

In general, the design professionals did not have a major advantage in the face of the industrial housing system. They were equally tied by the local offering of housing. At most, education and experience could help them in assessing the suitability of a dwelling to their needs and in foreseeing the ways in which it could be modified. Expertise as architect or interior architect had probably also eased the planning



and execution of renovations. The interviews of design professionals indicate sensitiveness to those aspects of the dwelling product that they were focusing on in their work. The construction draughtsman stressed the functional details of her flat, while the interior designer was focusing on haptic and visual experiences created by materials and objects in space. The architect participant put forth that he is not a specialist in the actual dwelling space but is looking at housing in the scale of buildings and the city. This to me reflects the subordinate position of the “small scale, interior” perspective in housing design.

Attitudes towards professional design among the other groups were mixed. Design or architecture as terms did not come up in the majority of interviews no more than the role of housing designers. Apart from a few comments about the ugliness of suburban concrete element houses, housing design was mostly discussed in a functional meaning and in conjunction of the interior space of dwellings. This young suburban mother saw avant-garde design products as ugly and uncomfortable:

*I don't like design furniture. Furniture should look inviting.  
The bed beckons you to loll on it when it's soft and puffy.*  
(U14)

High-end design culture was represented in just a few of the homes and mostly as singular design objects. Architecture or product design in the avant-garde meaning were not part of the everyday sphere of the users apart from some exceptions. However, the study opens up other dimensions of design in everyday living, revealed for instance by the users with disabilities when talking about their self-created modifications. If design in the commercial housing concepts serves simultaneous standardisation and product differentiation as well as creation of sign value through branding and connotations to lifestyles (Chapter 4.3), the user study highlights the importance of personalisation, and the role of design in enhancing the tangible functional and experiential quality of dwelling.

#### LEARNING BY DWELLING

When people live together with their dwellings they learn about themselves as residents and about dwellings as artefacts. Real-life experience can instigate changes to some of their housing preferences. As illustrated by the following example, the value and meaning of a desired attribute of the dwelling product can diminish and once important need become obsolete if the

user experience is unsatisfactory. Here, the conventional yard design in their terraced house did not meet the needs of a couple with disabilities:

*The first time in my life when I had an own yard I found out that it wasn't really my thing. You could of course have had it made over in Japanese style with forest litter and stone slabs and things. I had always dreamt of a garden, so it was a disappointment. The way the yard was designed made it impossible for me and my husband [who was already using a wheelchair] to take care of it. The yard was too big and surrounded by planks like a stall. (U1)*

An interesting case and object lesson on the importance of user control is provided by a wealthy entrepreneur couple who had let their architect son design themselves a perfect dream house with exceptionally high technological standard (see also Chapter 5.4.1):

*Technology-wise, [moving to Eiranranta] will be a big step downwards. Our previous home was very high-tech. It was designed by our son who is into these things. The house was so modern that all electricity, heating and such were computer-controlled. But neither of us loves computers so we always called in a man to check the graphs for us. [...] That became the reason for moving. The house was so complicated with all these computers and gadgets. I felt that I needed to control something by myself. We spend all summers in the countryside so the garden was tended by a gardener. There was a constant worry about the house and whether all the computer graphs are as they should. You feel good to give up something that you feel you can't manage. [...] The new home will be easier. It's quite manageable. My husband says that we will only have plastic flowers. (U41)*

The dwellings in Eiranranta had highest technical standard among urban housing production in Finland at the time, most notably district heating and cooling through ventilation (air conditioning has been very rare in Finnish housing). For a user accustomed to even more advanced technology, they nevertheless could mean “a big step downwards”. The example not only reflects the technological advancement of high-end detached housing production in comparison to urban blocks of flats but tells of variation in how users approach dwelling features based on their housing history. To a person coming from more standard Finnish

housing, the technology in Eiranranta flats was great luxury (U38). A participant who had two secondary homes abroad with air conditioning had learned to appreciate the possibility to cool down room temperature and now expected that also of her home in Finland (U37). Learning from other dwellings in these cases had affected the user's perception of a particular component of the dwelling product.

#### OLD OR NEW?

Contrasting attitudes towards the preferred age of one's dwelling can be read from the interviews. Comparison between new and old dwellings especially came up when the future Eiranranta residents were contemplating their housing choices, evidently because the Eiranranta flats were only representatives of new housing production among the material. Some of the participants expressed a strong preference for old flats, whereas for others newness had been a decisive factor in the housing purchase. The technical quality of new dwellings was considered good by the majority of respondents but their aesthetic quality less so. *Atmosphere* was a word frequently used by participants when describing old dwellings. The word was not connected to new housing production.

*I have always preferred living in old houses because of their atmosphere. The only new house in which I have lived was not very pleasant, the rooms were confined and the ceilings low. Old houses have big lovely rooms, the atmosphere is nice and everything is not necessarily that functional. In my opinion it's good to have some wasted space in a home. I know that in new housing that's not possible, but I like this Pippi Longstocking spirit in old houses. Things don't need to be totally in order but may be a bit crooked and well worn. It's nice to see the passing of time and some traces of life. (U42)*

*Until now, we have lived in old flats that we have renovated ourselves so that they have become quite individual. People have always liked our homes. I'm afraid that in a totally new flat this kind of special individuality will be lost. It remains to be seen how much you can do just by furnishing. (U40)*

*Having previously lived in old houses, I'm sorry to say but I think that new housing in general is more healthy and comfortable because of the advancement of materials and technology. [...] Old dwellings can be really tricky, you never know what comes across if you tear down a wall. I would not like an old flat anymore. (U44)*

As a generalisation, for affluent professionals living in inner-city Helsinki an old flat represents aesthetic quality and personality that is missing from new production. Passing of time to them adds experiential value to a dwelling that money can't buy. An old flat in poor condition is also seen as opportunity to design and refurbish one's dwelling to perfection. By contrast, many suburban renters simply equate an old flat with "in need of repair". Defects caused by wear and tear to their dwelling mean a constant and sometimes very tangible discomfort that one has to bear with, struggle to get repaired by the landlord or use one's own meagre income to fix (U10). Aside from these opposites, there was in all groups variation in preferences regarding new versus old dwellings. It seems that the value of new housing despite its high technical standard is not as self-evident to people as housing professionals may think.

#### 5.4.3

#### SYSTEMIC PATHWAYS

To enrich the picture of users' long-term housing strategies, I will conclude this section of the study by casting light on some key constraining factors and important experiences during housing career that were influencing the participants' housing decisions and perceptions of the dwelling product. Here a reference should be made to Clapham's (2005) notion of housing pathways. His central argument is that housing "careers" from the perspective of individual residents should be understood less as straightforward consumption patterns determined by demographic and economic factors, but rather as individual pathways among opportunities in the market where housing increasingly serves the attempted fulfilment of personal, identity and lifestyle related goals. Clapham emphasises the impact of previous experiences to housing decisions and to the way housing is perceived. I have not systematically analysed the housing histories of the users. The interviews, however, provide insights about their navigation patterns across the housing system and concurrent changes to meaning and value of housing.

#### FORCED MOVES AND NEW BEGINNINGS

There are examples of both voluntary and forced housing choices in the material. Some users presented their housing career as series of rational decisions justified by family size, economic resources and location. In many cases, however, choices had resulted from complex chains of events partially beyond the

control of individuals. Turns in life had enabled some persons to enhance their living standard and driven others to less satisfactory conditions. As an example of the complex factors influencing housing choices, the death of her husband had instigated a woman's move back to her childhood home, from which she had had to move away when her mother passed away. Later during her housing career an illness affecting mobility had made her to seek into an elevator building. Yet later, going on sick pension and economic depression had forced her to move from an owner-occupied to a right-of-occupancy flat (U24). Illness, unemployment and divorce had affected housing choices in all the user groups. Divorce or separation was the most common cause for a forced move among the users. In this situation, they had needed to find a new flat quickly and to make many compromises. Some had let go of their dream dwelling (U36), and most were left with divided possessions ("just a frying pan", U10) and diminished funds. A man in the elite group communicated how divorce had caused uncertainty to his housing career:

*I decidedly took a risk buying this flat in the middle of my divorce process, which has put me in a bit of a difficult financial situation. In fact I'm wondering whether I'll be able to keep the flat. I'll have to try to manage for at least two years until I can sell it without having to pay taxes from the sales profit. It will be tough but I will survive with the support of my 30 years of working experience. Let's just hope that I won't have to give up this dream flat that I've found.*

Removals regardless of their motivation also mark new beginnings in life. Change of dwelling was perceived by many participants especially in the Eiranranta group as an exciting opportunity to construct one's environment anew. The reinvigorating effect of housing change despite sadness about its cause is echoed in this woman's bittersweet memory of starting living again:

*I remember the first night when we had nothing, just mattresses bought from [a shopping centre]. My ex-husband had given us some kettles and pans and we went shopping for cleaning equipment, that's how we got started with. We slept on mattresses on the floor. It's funny how little you need for getting by. Afterwards it's become a joke between me and my daughter. Why couldn't we start from the beginning again and spend some time in an empty flat? (U20)*

Avoidance of practical nuisance can initiate a move as well. Upcoming (plumbing) renovation had pushed several users away from a previous dwelling (U30, U38, U44). Yet others were afraid of the impact of eventual plumbing renovation to their economy and everyday living. Certainty of no repair needs in the near future had attracted some to a new house. The material shows how both external trends (economic fluctuation), social factors (wish to get away from an unpleasant neighbourhood, U33), life events (birth of child, separation, illness), and issues instigated by the physical dwelling product (renovation needs) propel housing pathways.

#### LOCK-INS AND TRADE-OFFS

Intention to change dwelling was a point at which many participants' wishes and preferences had collided with the housing system (cf. Lapintie 2010a, Shove 1999). Mismatch between their own needs and resources and viable alternatives in the local market either restrained people from fulfilling their needs or forced them to move away from a preferred area:

*I dream of buying my own flat, but with my income it's impossible here [in the Helsinki region]. It would be nice to furnish it, paint it and make it look like mine, but with my salary I just have to stay where I am. (U13)*

*It was a flat by the sea. We used to sit on the glazed balcony after sauna looking at the lapping of waves. So you can say it was comfortable living. But the prices of family dwellings in that area are so insane that we had no chance to continue living in there, especially when one of us was going on maternity leave. (U29)*

The users' choices in the housing market were characterised by lock-ins (self-imposed or other constraints narrowing down the range of alternatives) and trade-offs (giving up or downgrading on some attribute of dwelling in order to gain on another attribute estimated to be more valuable). I have discussed how situations like precarious work and shared parenting restrict people's choices and possibility to invest in housing (see Figure 43). Location of work, school and daycare are obvious examples of factors that guide location choices. Several parents mentioned that they would prefer to stay in the same area until the children finish their school. A single mother (U31) had carefully optimised the size of her dwelling and commuting distance and settled down with the intention that this flat would sustain her family through

the child's schooling. Many participants wanted to stay in a familiar area where they had been living for long and to which they had grown attached (e.g. U37, U40). To some, proximity to relatives was a key attraction. A young woman had moved three times inside the same block of flats, partly because her mother who was helping in childcare was living next door (U14). Several relatives of an immigrant family had gradually moved into the same neighbourhood (U11).

Most common trade-off in the material is between location and amount of space. Many participants had moved further away from the centre to be able to afford a larger dwelling. More remote area had also been chosen because of lower rent. In some cases, moving to a suburb had enabled access to a newer or better equipped flat. Especially renters in old housing estates (U13, U16, U20, U22) valued the cost-size ratio of their dwellings. Two of them even turned the lack of services in their suburb to an advantage by maintaining that a shopping centre would just bring disorderliness to the area and increase the rent.

Negotiation between cost, size and location comes up in the majority of the interviews. An inner-city resident, for instance, could contemplate whether to move into a suburb where she could live closer to nature and afford more or the same space plus a car (U27). Another urban resident discussed to a great length how her wishes for spaciousness and a separate room for each function were mutually exclusive regarding what she could afford in the center (U23). Most of the urban dwellers had intentionally compromised dwelling size in favour of central location. For them, the value of urban living outweighed the value of excess space. Trade-offs were evident even among the affluent Eiranranta customers, several of whom now were moving into a smaller flat for economic reasons.

#### "THIS IS JUST TEMPORARY"

A prevailing feeling of temporariness characterised many participants' experience of dwelling. Totally 13 users – 7 renters and 6 high-of-occupancy residents, but zero owners – stated that their present dwelling is "just temporary". They had the experience of being in an intermediate phase in their housing career, not quite having achieved what they would have wanted. Some had drifted into their current dwelling as result of forced choices dictated by economic constraints, sudden turns in life, or work (U13, U25). Others had temporarily compromised their long-term housing goals in order to go through a transitional life phase such as the infancy of children (U5, U29) or post-divorce turbulence (U18, U21), after which

needs and resources could be reassessed. The following quote encapsulates the experience of a young family in the greater Helsinki rental housing market:

*This is a temporary solution for us. We moved in here because it was the only alternative at the time. A family flat was not available elsewhere in such a hurry. When our financial situation improves we will definitely move out from here. (U29)*

Yet other interviewees had remained in what had originally been intended as short-term residence. A middle-aged woman who had moved often and now lived in an inner-city rental flat despite a hint of resignation cherished plans for change:

*This is a decent place ['ihan kelpo kämppä'] but it's really by no means a very long-term dwelling. Even if I've lived here longer than anywhere else since moving away from home. But that's because I've become old and lazy [laughs]. (U23)*

The interviews clearly indicate that feeling of temporariness diminishes a resident's commitment to her dwelling and willingness to invest money and effort into its personalisation, thus weakening the relationship between user and the dwelling product. This was particularly pointed out by renters in precarious life situations (U13, U18, U25). By contrast, a mental decision to settle down into a dwelling regardless of likely duration of residence motivated users to personalise and improve their dwelling (U4, U15, U16, U22). It should be noted, however, that recognition of the temporary nature of one's housing choices does not necessarily affect the experienced quality of living. Change of dwellings is an expected development that characterises most housing pathways.

As discussed before, home ownership was a desired goal for both the renters and the residents of right-of-occupancy dwellings even if they would acknowledge that the goal is unrealistic. Only one person (U22) considered renting the perfect tenure form. Others saw it as more or less forced solution or compromise necessitated by their income level and/or present life situation. However, many renters despite non-ideal tenure form were rather contented with their dwelling. Affordability and easy availability in comparison to owner-occupied housing, avoidance of a big housing loan, possibility to swift removal when life situation changes, and freedom from house maintenance and upkeep responsibilities were mentioned



as redeeming features of rental housing. In reference to the categories of private renters identified by British housing researcher David Knight (see Clapham 2005, 149–150), there are among the participants impatient would-be home-owners (U5, U29, U31, U33), fatalistic would-be home-owners (U17), pragmatic endurers (U6, U13, U21), procrastinators who for various reasons had postponed commitment to owner-occupation even if they eventually wanted to do so (U23, U32), and contented nesters happy with renting or right-of-occupancy housing (U10, U12, U22, U24, U26). One of the procrastinators nevertheless looked back on her housing pathway with some contempt:

*My background is such that I've never had any capital from home. At the same time, I have wanted to get everything out of life, travel a lot and such. That's why I've ended up renting. And I have enjoyed life, I really consider myself a happy person. (U23)*

Right-of-occupancy housing in the light of my material seems an in-between housing form that provides a channel for the push away from rental housing but at the same time is characterised by a strong pull towards owner-occupied housing. For people dissatisfied with renting, right-of-occupancy housing offers an alternative that is considered more secure and of better material quality, while being financially more accessible than owning. As an example of the reasons for choosing the housing form, one family had intentionally escaped from a rental block of flats with social problems to a right-of-occupancy dwelling in a quieter area with the aim of providing their children a better environment (U33). The tenure form seems to attract families who do not quite afford a large enough owner-occupied dwelling or decide at this point not to commit to home ownership, even if that is what they eventually desire. There seemed to be within this group certain unreleased pressure caused by unfulfilled needs and wishes, even if some residents also were relatively satisfied. As opposed to renters, many of whom had lowered their expectations along the attainable, right-of-occupancy residents had higher housing expectations. Several of them would have wanted a larger dwelling and they in average were more critical towards the design of their dwelling than the other groups. Right-of-occupancy housing was also criticised as bureaucratic and expensive tenure form, merely suitable as springboard for home ownership (U24, U32). A single mother of a teenage son explained the reasons for choosing her present right-of-occupancy flat in a semi-detached house:

*I had decided that I will not spend the rest of my life renting. Because my son had so many hobbies and other things here, I didn't want to leave the area. At first I examined the option of buying, but didn't have the courage to take out such a big loan on my own. So I thought, well, this is a transitional period for me. When my son moves away I will buy a flat. I will not live in here for ever. (U32)*

Three renters and two right-of-occupancy residents described their dwelling as “just a place to live in, not a home” (“tämmä on vain asunto, ei koti”), suggesting low emotional commitment (U8, U13, U18, U25, U33). Some had plans of moving elsewhere, for example away from the expensive and crowded Helsinki region like the family below, as soon as work and family situation permit. In this case the purchase of a secondary home had changed the family's relationship to their primary dwelling in town:

*The importance of this dwelling has diminished after we got the summer house, which is a very dear place to us. We spend almost all weekends and holidays there. It has really increased our quality of living. There's the garden and our own little forest and the lake. So this place here doesn't need to be anything more than a temporary... I would say that this is not a home, this is just a place to live in. [...] After I will have finished my career, our home will definitely not be in here but in the countryside, possibly at the summer house or near my wife's relatives abroad. (U33)*

Interestingly, the users' everyday experience of dwelling and the living environment most often was predominantly positive despite this kind of plans. Unfulfilment of “big” long-term housing goals did not necessarily mean dissatisfaction in the “small” everyday scale of dwelling. The users were able to focus on the good sides in their given environment and to a large degree overlook its defects. I would hypothesise that reassuring oneself of the temporariness of one's choice of dwelling as psychological strategy helps people in coping with the unescapable mismatches in their living environment. The users' recurrent references to temporariness perhaps tell about avoidance and denial in the face of the housing market but also of hope and anticipation of a better future.

#### DREAMS AND ADJUSTED DREAMS

A one-family house in the outskirts of a city has been considered the housing ideal of a majority of Finns. 18 out of my 44 interviewees specified a detached house as their dream dwelling.

They typically dreamt of an old, spacious wooden villa with a big garden. A detached house to them represented their own territory and possibility to do things with hands. Privacy, control of one's own environment, a large dwelling with more flexibility than a flat, and extra space for tinkering were mentioned as desired qualities in a detached house. A low density residential area was also seen by some people as better for children than a high-rise suburb. However, previous experiences of living in detached houses had also altered the views of some users. To one participant now living in a rental flat, a large old house in the past had become a burdensome renovation and upkeep project, the giving up of which had been a relief despite of its high experiential value. She was still dreaming of an old wooden house, but one with less space and easier maintenance:

*I do miss the detached house [where I lived before separation] even if I'm not a detached house person. As I'm not really into taking care of a house and a garden, a bit less space is fine for me. More than living in a detached house as such I miss some details like the old timber ceiling beams upstairs, the original surfaces and spaciousness. (U12)*

22 of the participants had vaguely urban housing dreams. Typically this meant living in a relatively small multi-family house, possibly with an own garden, in a peaceful yet conveniently reachable suburban area near to nature and water. This as well is close to the prevalent Finnish housing ideal attested by previous research. Four participants identified terraced house as their desired housing type. Only three participants (U19, U23, U40) proclaimed themselves as profound urbanites who absolutely prefer a central urban location and living in a block of flats. Members of the elite group, several of whom had previously lived in large one-family houses and owned or had access to vacation houses in the countryside or abroad, were also markedly urban by preference. They emphasised the carelessness and easiness of maintenance of a flat in comparison to a detached house. This is partly explained by the fact that many of them were empty nesters with adult children recently moved away from home, who now were seeking the comfort of inner-city living. Several of them also spent a lot of time in their vacation house and highly valued the quality of living near nature. Four participants did not bring up any specific housing dreams. They were contented or resigned with their present dwelling.

The participants assessed their own housing dreams very realistically. They were well aware that the

perfect dream dwelling most probably would be financially or otherwise unattainable for them for ever. For instance, all but one of the disabled interviewees dreamed of living in a detached house, while at the same time stressing that such housing form due to inaccessibility and maintenance work would not be realistically suitable for them. Reflection of personal dreams with real-world constraints had led to what can be called *adjusted dreams*.<sup>25</sup> The users had intentionally lowered their expectations while at the same time retaining the most valuable attributes of their dream dwelling in some altered form. One disabled person (U3) had substituted her original dream design, a two-level house on a slope based on childhood experience of a relatives' home, with more accessible dream design comprising only one floor in a terraced house and just a little garden. The attributes of her dream design had also guided the choice of her present dwelling even if they were necessarily realised as different design solutions in a block of flats than in a detached house (balcony as a substitute for her own garden, for instance). Similarly, a terraced house was seen by several participants as a satisfactory compromise between a flat and a detached house. Following quote from a young mother is typical example of an adjusted housing dream:

*The nearby area of Viertola is lovely. I would like to live in a terraced house in there with 4–5 rooms and kitchen, a utility room and our own garden. I could decorate it as I wish and there would be a sauna, a covered terrace, own little room for the [visiting] granny and a separate games room with flipper and pool table. I'm crazy about retro style objects. But these are just dreams. Just a regular row house flat with sauna, garden and four rooms and a kitchen would be great. There wouldn't need to be luxurious kitchen cabinetry or parquet floors or anything extra. An own room for everyone would be enough. (U14)*

Accepting personal limitations and the realities of the housing market does not mean letting go of dreams. Dream dwelling as manifested in the narratives of the users is not an absolute goal, the unrealisation of which as one complete design solution would be a cause of great regret or anxiety, but rather an evolving collection of desirable design features that the users gradually aspire to get nearer to by their various choices on different levels of the dwelling product. Even if dreams are connected to or described through certain dwelling types or house types, parts of them can be realised in other types as well and as many different design solutions. Rather than in specific housing types as such, the focus when trying to understand

25.

I have presented this finding already in the reports of the EA and AHAA projects (see Appendix 1).

people's housing dreams in the context of design should be in the user value (promise of meaningful difference) embodied in certain housing forms and designs. To many users, a detached house represented ownership, control and individuality that urban housing according to their experience lacks.

*My dream house has a big garden, two floors, high living room, balcony upstairs, sauna and garage. I have so many ideas. I would like it to be something different. I used to discuss the dreams with my ex-wife. She said that they are great but bloody expensive. (U10)*

Housing dreams not only support people in explicating their housing preferences in relation to the offering but also help them in bearing with the inadequacies of their present dwelling conditions. Regardless of their realisation, or viability for that matter, housing dreams bring into the everyday a sense of future and a possibility for change. They provide reflective material against which experiences and available opportunities can be evaluated.

Housing dreams to my mind have some important implications for housing design and research. Firstly, the gap between stated housing preferences and the reality of housing careers should be recognised. Even if a person would prefer a detached house, she may not be able to attain that dream during her housing career, or may decide not to pursue it. Yet, she probably wants to live in a dwelling that satisfactorily fulfils some of her most significant needs. Ideally, designers should aim at providing her features of her dream dwelling in a more attainable form. Secondly, it seems that dreaming is an inherent part of dwelling. Amidst the petty and grave mismatches of lived-in housing, imagining and planning for an ideal home can provide great satisfaction. Indeed, is it not the existence of dreams themselves rather than their fulfilment that keeps housing consumption going. Even the most perfect dream dwelling personalised to the last detail can lose its value to a user, as the smart house case (U41) illustrates. It is also possible to see dreaming as designerly activity whereby (at least some) users develop and articulate design ideas that can eventually be implemented in their future dwellings.

#### CONTINGENCY, TRANSIENCE AND CONTENTED UNFULFILMENT

It seems characteristic to the dwelling product in use that the meanings given to it and the way it is experienced fluctuate over time and are affected by other experiences in life (cf. Clapham 2005). The value of certain attributes in a dwelling

may diminish or grow along life changes. Sudden turns such as children moving away from home, divorce or illness can transform the user's perception of a dwelling and change the way it is used. An obvious example is the vacation of rooms in the first case. As noted, life changes also often instigate a move to another dwelling. What once felt like a dream home may become an emotional as well as practical burden. One interviewee described the aftermath of her divorce:

*We bought the [previous] flat with the intention that it will be our home for the rest of our lives. I have to say it was my dream dwelling. But then came the divorce and it began to feel too big for just me and the children. Due to the change in life the significance of that dwelling diminished. It didn't feel like the dream anymore, even if the flat is still lovely. (U42)*

"Messy, complex life" (Till 2005) brings contingency into the relationship between user and the dwelling product. Some user needs are more long-lasting while others may change faster depending on work or family situation. As needs that led to anchoring to a dwelling change, the relationship to it has to be reassessed. A housing solution meant as permanent can become unfit or require some adaptation to suit the new situation. The value of dwelling attributes to user hence is not fixed but evolves in time. A dwelling design that matches the user's present needs may become obsolete in the future.

Based on the user interviews, it seems that complete match in dwelling, if that is ever achieved, is often momentary and transient. Recognition of this, however, should not diminish the importance of striving for fulfilment of people's housing needs in the present moment. What remains along volatile housing pathways is the idea of the home. The woman who had relocated many times and always built her dwelling anew poetically referred to the mental core idea of home that she had carried along in changing environments:

*In Lapland, people ask 'where are you away from?' ['mistä oot poissa?'] when they want to know where you were born. We have moved so many times that I always think our home, the place we are away from, being 'the birch and the star'.<sup>26</sup> (U41)*

Based on the interviews, change and unfulfilment of dreams are characteristic to the experience of dwelling. Housing as constant in life provides stability and continuity,

26 .

Reference to the well-known Finnish fairy tale *Koivu ja tähti* (The Birch and the Star) written by Zacharias Topelius in 1870. In the story, the distant memory of a birch tree and a star as signs of their birthplace guides two children back home from captivity in a far land. The birch and the star thus symbolise a lost, ideal home.

but housing pathways are driven by change (in life stage, family situation, resources, capabilities, interests, etc.). Letting go of dwellings and beginning new dwelling relationships is part of most people's housing career. Moving to another place brings material variation and change to living. Turns in housing pathways add new layers to our experience of the built environment and evoke ever new housing dreams and desires.

The lived experience of dwelling albeit taking place within designed material confines is partially out of reach of professional design acts. As dwellings delivered by the housing system are brought into the realm of everyday living and residents take control, they come to serve the fulfilment of our basic needs and desires in individual ways that are not entirely predictable. The consistency and design of the dwelling product significantly impacts but does not completely determine the user experience of dwelling. The easily modifiable layer of domestic objects and furnishings gives users considerable leverage in personalising their immediate environment and adapting the dwelling to fit their lifestyles and needs. Despite recognition of the qualitative homogeneity of mass-produced urban housing, the problem to users may not so much be the lack of aesthetic and architectural diversity on offer but structural economic and geographic factors that hinder fulfilment of housing wishes. On the other hand, it seems evident that novel designs made available in the market influence people's expectations and create demand.

After all, there might not be a great worry. The majority of people in Finland according to surveys are rather satisfied with their dwelling. Academics, designers and housing professionals tend to overemphasise the meaning of dwelling features to residents (King 2005). The feeling of being at home is sustained regardless of the detailed design of the dwelling if basic requirements such as control of space and continuity are met. Amidst all imperfection of life, the interviews reveal flickering moments of joy and satisfaction over own dwelling that transmit a real experience of "mineness" and profound contentment with the everyday.

*I was at home with my child and had cleaned the flat, it was a wintry afternoon, the sun was shining, and we were there colouring something together. It was a perfect domestic moment. (U12)*

*I like my home. It's cosy and it's... a home that I have built. Sometimes I just sit in the armchair and look around thinking 'well, doesn't it look nice in my place'. (U32)*

It is a powerful theme running through the users' stories how we tend to adapt to, get used to, and learn to like our dwellings as we gradually by use, active and creative strategies of our own, and accumulation of valuable everyday experiences build a personal relationship with them. In this way, everyday living with all its comforting mundaneness and repetitiveness, enriched by meaningful social encounters and illuminated by intimate memories and dreams, softens the hard edges of built reality.





# 6 CONCLU

A DESIGN  
PERSPECT  
TO DWELL

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THE MAIN RESULTS of the dissertation and its theoretical and practical implications will be summarised in this chapter. The empirical findings are discussed in light of the main research question, converging into an explanation of dwelling as product in the context of an expanded understanding of design. The chapter begins with recapitulation of the main outcomes of the study, following the course of its argumentation (Chapter 6.1). The study's theoretical contribution is also discussed here. Reflections of the results to design practice are then opened up with the help of tentative conceptual design examples (Chapter 6.2). After that, implications of the research regarding the Finnish housing system will be brought up (Chapter 6.3). The work ends with assessment of its reliability and validity (Chapter 6.4), and a list of topics for further research (Chapter 6.5).

## 6.1

## Dwelling as product

THE LATE-MODERN DWELLING:  
A MEETING POINT OF  
PRODUCTION AND CONSUMPTION

User-centred diversification of the offering of industrially produced urban housing has become a subject of academic, professional and public interest in Finland. There seems to be a mismatch between what kind of housing is available and where and the housing desires of people. Demographic changes, migration and urbanisation steer the demand of housing on a national and regional level. Economic growth has induced a rise of standards considering the quality of housing. Due to individualisation of the society, our lifestyles and housing preferences may be increasingly diverse. There is a growing emphasis on housing as means of personal fulfilment. People are searching ways for shaping the industrial dwelling along their own valuable ends. In late-modern consumer society, housing is becoming an increasingly aestheticised goods.

At the same time, the housing industry along with other branches of manufacturing is slowly moving towards a new production paradigm that is characterised by reliance on information, flexible specialisation, personalisation of products, collaborative production networks, and co-creation of value through the interaction of producers and consumers. In housing, this ideally would mean increasing structural modularity, openness and flexibility, as well as employment of user-responsive production methods such as mass customisation and co-configuration. Transition towards ecologically sustainable building and the drive towards the smart home increase the technological complexity of buildings.

The new production philosophy suggests seeing the dwelling as a continuously evolving offering rather than finished product. In emerging component-based design and manufacturing process all parts of the dwelling would form a nested modular hierarchy with compatible interfaces where design and manufacturing can be distributed to a wide network of actors. The dwelling in the future can develop into an adaptive configuration with responsiveness during its entire lifecycle to the residents' changing needs and behaviour, provided by collaborative value networks where users have an active role. The mainstream housing production, however, at present remains far from these visions.

In late modernity, the role of design in value creation is emphasised. Flexible production and aestheticised consumption rely on design in differentiation of products. Design as integrative and generative practice is applied to increasingly complicated societal problems. There is a growing awareness of the social and environmental responsibility of design. Industrial design, architecture and urban planning are experiencing a turn towards more user-centred and collaborative approaches. The focus of design activity is shifting from form generation towards designing for user experience, and from top-down processes to collective sense-making in local contexts. Consequently, the object of design is expanding from physical products to complex human systems, where design is harnessed as a catalyst of transformations. This is inducing a repositioning of design in the society and diversification of the professional field. Apart from traditional product design, designers work as facilitators of local co-design processes ("immediate design", Keinonen 2009) and are involved in strategic and conceptual design activities ("remote design").

The qualitative homogeneity of industrial housing production in urban areas has been identified as a systemic challenge that requires the collaboration of many actors. On the other hand, the geographic rootedness, long lifecycle, slowness of change and historical path dependence of housing make it resistant to radical change. The fundamental role of housing in fulfilling basic needs, relative uniformity of local culture, and expensiveness of housing set limits for its variability. It seems that many people find the dominant dwelling designs replicated in the market quite satisfactory and seek for conformity with familiar dwelling ideals rather than individuality through dwelling. The overall progression of housing can be described as a slow evolutionary adaptation of a few well-proven precedents. This contradicts the innovation-orientedness of design practice.

Modernisation has meant commodification of dwelling: becoming of it as a mass produced object of consumption in the market. Dwelling has experienced a largely "silent industrialisation" (Brand 1994) whereby ever new elements of it have been distinguished as marketable commodities. Housing concepts and brands targeted at specific consumer segments systematically differentiate the offering in relation to consumers.

Theorists of late-modern consumer culture (Giddens, Schulze, Baudrillard) state that commodification entails packaging and distribution of aspects of lifestyles according to market criteria. Differences between people

are picked up and systematised by the production system. The consumer society relies on marginal differentiation of objects within the confines of industrial production, which creates an illusion of individuality. Plurality of choice and resulting continuous unfulfilment of needs are indispensable to the system. Products in the “experience market” are coded along simplified aesthetic classifications recognisable to consumers. The aesthetic properties of objects can be manipulated (by design) to provoke ever new marketable connotations while their functional essence remains. *Modularisation* here serves the alignment of objects along production lines and isolation of features that can be differentiated.

The dwelling product in this context becomes a meeting point for the intentions of producers and consumers. The tangible designable elements of dwelling play a part in negotiation of producer value and user value. My empirical material shows that there is a need in the housing industry for balancing between the contradictory drives towards increasing standardisation/replication in the supply side and increasing diversification/personalisation necessitated by individualisation of the demand. The housing concepts with their design aim at reconciliation of the two requirements.

The situation gives rise to tensions that impact dwelling design. Designers need to solve the contradiction between *singularity* and *seriality* of production: how to balance the logic of industrial mass production and buildings as singular artefacts so that qualitatively diverse local solutions can be provided without losing the advantage gained from standardisation. Another tension concerns the *specificity* versus *generality* of designs in relation to users. Balancing these requires identification of the individually valuable elements in dwelling where variation and user-specificity is beneficial and the elements that can remain more generic. A third tension spans between *novelty* and *conformity* of designs in relation to other designs in the market. A question here is whether to stick to incremental refinement or seek for radically transformative designs.

#### THE SYSTEMIC DWELLING: A HIERARCHICALLY ORGANISED ADAPTIVE ARTEFACT

In the dissertation, I have developed a theoretical framework for analysing the “productness” of dwelling that combines theories of hierarchic structure of the built environment (Habraken, Brand) with definitions of product in marketing

and industrial design and with evolutionary theories on design (Simon, Steadman, Marshall, Ziman). My overall approach to dwelling is systemic. The research renders visible dwelling as complex adaptive artefact that is grounded in precedent, embedded in physical reality, and moulded by its environment and the actors within it as it is being replicated over time.

Dwelling as product consists of heterogeneous elements with various degree of materiality that nest within the hierarchic levels of built form and are in control of different actors. Each element follows its own trajectory of development and has its own life cycle. The elements are connected to each other not only spatially but through individual acts of inhabitation. Elements on surface levels of form such as objects and furnishings are more rapid and flexible and can be controlled by users themselves, whereas elements on deeper levels like the building and the urban structure are slow and fixed, their change necessitating consensus among many actors. I have classified my empirical data along the levels of *objects*, *apartment*, *building* and *area*.

The composite dwelling product as a whole is *designable*, which means that the parts of it can be intentionally manipulated and qualitatively differentiated. The commodification of dwelling has drawn it closer to other industrial products. Adoption of the model of product from marketing has enabled me to open up this facet of dwelling. My study shows that dwelling resembles other consumer products in that it is constructed as a set of material attributes to deliver an intangible benefit or set of benefits to the user.

The study gives an overview of evolutionary approaches in architecture and design and reflects them to the case of industrial urban dwelling, contributing to academic discussion on the topic. The evolutionary analogy suggests perceiving individual dwellings as outcome of selection pressures operating within a variable population of dwellings integrated through time by descent (cf. Fleck 2000). Design activity according to the analogy is intentional search for (mutual, human-defined) value within a landscape of possible designs where both the underlying abstract “code” of artefacts and their specific “constructions” can be manipulated. The evolutionary approach also acknowledges an active role for users in transforming dwelling.

In the evolutionary view, dwelling designs arise out of conjunction of tacitly transmitted design ingredients determined by culture and the prevalent housing paradigm, imposed by the housing regime collectively by means like regulation and conventional designs, and willed design acts aimed at meeting specific local demands. A lot of what



we think as unique in dwellings is transmitted through inconspicuous, routinely copying by actors in the housing regime, including designers and users. In housing production, inherited features of dwelling meet local contexts, regulation, creative aspirations of individual designers and innovation efforts of companies, leading to countless variations on the theme of dwelling within the boundaries set by technology, economy and everyday living.

I identify five types of qualitative difference in the dwelling product (see Chapter 3.4.3). Dwellings across the world are *culturally* different. There's *generational* difference in housing created by transformation of its distinguishable "meta-style". There are *individual* differences between dwellings that are consequence of the one-of-a-kindness and localness of housing design and delivery. *Strategic* difference, illustrated by the housing concepts, is outcome of intentional differentiation of dwelling products. Difference through *use* results from individual interactions of dwellings and their residents in time.

#### A DESIGNERLY INTERLUDE: CONCEPTUAL DESIGN AND THE NOTION OF CONCEPT IN DESIGN

The dissertation increases the theoretical understanding on the notion of concept and its role in design, complementing the concept design literature in product design (e.g. Keinonen & Takala 2006) with empirical findings from the field of housing. On the other hand, the study adds upon the previous research on housing concepts in Finland. It contributes to the practical problem area of user-centred diversification of urban housing production by opening up the role of conceptual design in housing.

Conceptual design is an early phase in the design process that operates on a higher level of abstraction than implementation design. A *concept* in design is an abstract preliminary solution to a design problem. In the industry, concept is defined as a general plan of a new product including its basic features that distinguish it from other products.

My exploration on the usage of concept in various design fields reveals the many facets of the notion. Concept can be understood as a creative design idea guiding the designer, an anticipatory description of a new product that is used for strategic differentiation in the market, a template that specifies the basic elements of a product or service making possible its standardised duplication, an ambiguous

object of collaborative activity, or an algorithmic set of rules that regulates the generation of designs. Concept thus has various degrees of rigidity ranging from abstract idea to comprehensive specification.

Concept in design is a distinctive articulation of ideas and knowledge that is devised for a purpose and relies on abstraction. It has an instrumental role in the design and product development process. A concept simultaneously addresses a whole and its constituent parts, bringing them into a relationship. It presumes a subject outside of itself that it precedes, refers to or is imposed on. It does not completely determine its subject or outcome but works on reduction and simplification. A concept can be manipulated independent of its specific outcomes and transferred to new uses. It has the capacity to generate multiple different outcomes and mediate between actors.

To sum up, a concept in design and product development is a tool for compressing essential design information so that it can be shifted across systemic borders and to multiple locations. In this way it serves the logic of flexible and collaborative mass production. Increasing technical complexity of products and growing demand for product variety highlight the importance of the underlying concepts. Consequently, concept design as a practice is establishing itself onto new application areas, including housing.

#### THE COMMODIFIED DWELLING: A BUNDLE OF ATTRIBUTES DUPLICATED IN THE MARKET

My first empirical case investigates the commodification of dwelling as evidenced by duplicable urban housing concepts in Finland. I have detected parallels between dwelling and other industrial products and examined how the concepts act as mediation between industrial mass production and users. My case concepts are *Aktiivikoti*, a concept for seniors emphasising accessibility, *BoKlok*, a streamlined housing solution sold at Ikea, *PlusKoti* that features aesthetic and functional variability through open building, *Neo-Loft*, a new interpretation of the loft dwelling allowing for self-design of the interior, and *Loppukiri*, a communal senior housing concept initiated by the residents themselves.

My research for the first time posits housing concepts in the history of urban housing in Finland. I have also detected differences in their origins, focus and relationship to the user. My study sheds light on the material composition

of the concepts and their relationship to the housing projects that are derived from them. It shows how tangible designable elements of the dwelling product come to serve the strategies of producers and act as vehicle of commodification. These aspects have largely eluded previous research.

Housing concepts seen in the evolution of industrial housing production are an expected development in a commodification process instigated by modernity whereby the individual dwelling has gradually been distinguished as a differentiable object of consumption. Relying on previous studies (Juntto 1990, Saarikangas 2002, Hankonen 1994), I have divided the history of urban housing in Finland into three overlapping periods that are characterised by differences in many aspects of housing such as perception of the user, dominant dwelling designs and building technology.

The early period of urban housing until the breakthrough of modernism by the 1950s was characterised by parallel development of dwelling types for different social strata and craft-intensive on-site building. The formation of the functionally differentiated modern standard dwelling designed for anonymous, classless users marked the transition to a period of standardisation and industrialisation. As noted by Hankonen, the housing system during this period imposed on people the idea of continuous unfulfilment of needs. The norms and standards from this era largely continue to define the dwelling of today.

Housing concepts as a phenomenon are connected to the general tendency towards more individualism that has characterised housing production in Finland already for a few decades. Lifestyle changes in late-modern society have led to partial questioning of the standard dwelling. Users are now seen as individual consumers with subjective demands and preferences, and discourses in the field emphasise the quality and diversity of dwelling. At the same time, new technology is enabling flexible manufacturing.

First so named housing concepts in Finland came to the market in early 1990s. The first concepts were new financing models of housing targeted at consumers. Several developments have since favoured the introduction of duplicable concepts. A key factor has been the concentration of housing industry. Big companies operating in many countries profit from developing duplicable concepts and have large enough markets to allow product differentiation. In addition, the division of residential development and construction into separate business areas in companies during the 2000s has led to distinguishing of residential product development as special professional activity that deals with value creation beyond

one-off housing projects and the strategic and conceptual aspects of design. This has also meant centralisation of design decisions.

An important finding of my study is that dwelling as product seems to follow a similar trajectory of qualitative change than other industrial products during their long-term career in the market (cf. Eger & Drukker 2010). The phases of performance, optimisation, itemisation, segmentation, individualisation and awareness are evident in the Finnish dwelling stock. More research would be needed to elaborate the parallel further.

Investigation of the case concepts shows that housing concepts in the market are constructed as sets of attributes aiming to provide an essentially immaterial problem-solving benefit to the user. This makes them similar to how products are seen in marketing studies. The core benefits promised by the case concepts relate to accessibility (Aktiivikoti), affordability (BoKlok), aesthetic and functional personalisation (PlusKoti), self-design (Neo-Loft), and communality (Loppukiri). Strategies for making possible the promise are, respectively, added accessory features to dwelling, simplification, variability through basic mass customisation, incompleteness, and a new operational model.

The actual product elements in concepts that participate in delivering their promise are distributed on levels of built form. In addition to physical elements the concepts include differentiating elements outside of built form such as assistive equipment (Aktiivikoti), financing model (BoKlok), customisation service (PlusKoti), and service model (Loppukiri). This indicates the expansion of dwelling as an object of design. The concepts have variable material depth. Some concentrate on surface of the dwelling while others address the building or area. The concepts operate across the built hierarchy by singling out and proposing to users elements that are anticipated to be valuable to them. They may lock some parts of the dwelling product (BoKlok), increase the variation of parts (PlusKoti), or unlock parts to allow modification by user (Neo-Loft).

Importantly, my analysis shows that housing concepts in the market differ with respect to their origins (developer-, designer- or user-initiated), inspiration (special housing, consumer products, technological innovation, avant-garde architecture, social innovation), extent of user engagement (from passive in Aktiivikoti and BoKlok to dominant in Loppukiri), the degree to which they determine the design of a singular housing project (from near indifference in Aktiivikoti to complete specification of architectural form

in BoKlok), and the main point at which user value is created (from production phase in BoKlok to customisation phase in PlusKoti and use phase in Loppukiri).

The concepts at large represent two main approaches. Commercial concepts (Aktiivikoti) typically rely on mere branding or technological innovation such as mass customisation, seeking for extensive duplicability. User-driven concepts (Loppukiri) aim at solving social needs through one-off unique housing projects built for specific users. They seem to extend deeper into the built form and involve more collaborative design. Neither approach at present fully exploits the transformative potential of design, although architects in many cases have had a crucial facilitator role in getting a new concept through.

A housing concept as manifested in my cases is a specification of a novel housing solution that offers a clearly communicated benefit to the user and is duplicable so that multiple housing projects can be realised according to it. It corresponds to a recognised market demand or gap in the offering. A housing concept typically contains some differentiating element that is outside of built form. Housing concepts serve positioning of production in the market and systematisation of product variation.

The housing concepts mediate between the realms of production and use, serving the reconciliation of industrial mass production relying on standardisation and replication, and the increasing demand for diversity and individuality of housing.

Firstly, the housing concepts attempt to overcome the chasm between seriality and singularity in production. A housing concept provides a standard template from which multiple locally adapted housing projects can be derived that are only partially determined by the concept. The independence of housing concepts from specific building designs makes them resilient. During the localisation of a concept, architecture and the geographic place become components of the end product.

Secondly, the concepts seek to balance user value and producer value by translating user needs into product features that are feasible to produce. They directly address users by lifestyle connotations and possibilities for personalisation. On the other hand, they exhibit elements that are invisible to the user but necessary for them to be viable to the producer. These “hidden” prerequisites have not been recognised by earlier research.

Thirdly, housing concepts act as devices of collaborative product development. They facilitate the diffusion of innovations in housing, demonstrating a new

mode of housing design. The concepts show how meaningful difference in housing can be intentionally designed, shaped into a duplicable format and disseminated in the market, rather than counting on coincidental success of randomly different housing projects.

Housing concepts have led to establishment of concept design as an activity in the housing industry. Two of the three developers in the study had a designated residential product development team dealing with customer insight, market analysis, concept development, product specification, interior fit-out assortment design and management, customer service development, etc. The work of the teams was supported by technical product development units. In the teams, new designer roles have emerged that indicate the expansion of dwelling design towards both “remote” and “immediate” direction.

My research suggests three phases of emergence of dwelling as product. *Housing development* as a centrally controlled phase deals with “remote” conceptualisation and specification of the dwelling product typically on the basis of general market knowledge. In individual *housing projects* led by project teams, the speculative product is given concrete form by conventional architectural and systems design. Some knowledge about actual customers can be available in this phase. During *use of housing*, control shifts to residents. Design here can play a role in “immediate” modification of existing environments in collaboration with users, requiring in-depth contextual knowledge.

The study indicates a growing interest among developers towards both the early conceptual stage of value creation and to the use phase of housing. This implies a need for traditional housing design to increasingly negotiate with the two other design realms.

In-depth user knowledge is largely disconnected from the residential development process. Typical knowledge that developers draw on are generic customer segmentation models, customer response realised as sales, and customer feedback on product features and the quality of service. These, however, rarely impact the actual design of products. For instance, segmentation is mostly just utilised in marketing.

In the otherwise so rational value creation process of market-oriented housing, no systematic methods are available for ensuring the realisation of user value. The developers are partially at loss about which product attributes mean what to whom, how to effectively impose knowledge about users to the development process, and how to measure the user value of end products. The relationship between products and their

anticipated users is weak, random and uncontrolled. At best, design decisions happen through “informed guessing” based on professional experience. This leads to safely average solutions which as such can also be relatively unproblematic to users.

Users in market-driven urban housing production are merely given agency as customers making choices among pre-designed options on surface levels of the dwelling product. More user-driven production would require new skills and is not seen as profitable. The industry has not managed to utilise co-design, let alone methods like lead user innovation. Profound mass customisation or co-configuration have not been realised in the field. The industry lacks methods as well as incentives for including users to housing production.

My interviewees unanimously admitted the qualitative homogeneity of housing production in Finland. However, they stressed the reciprocity of supply and demand, stating that the current offering has evolved to cover the scope of most significant user needs relatively well and that there is little space for meaningful differentiation beyond the existing. The developers saw the majority of customers as conservative, driven by avoidance of risks, and rather satisfied with mainstream designs. The demand for individuality was deemed to concern the premium end of the offering in larger cities. Finland was seen as too small a market to allow substantial differentiation of products.

Location and the material quality of the end product were identified by the developers as main competitiveness factors in the business. Importantly, they also emphasised designable elements outside of the physical product such as customer service as means of differentiation, which again suggests the expansion of dwelling as an object of design. Personalised customer service, creation of lifestyle connotations by branding, and marketing that singles out regular product features and presents them as desirable to different target groups are ways to create perceptions of difference within a homogenous offering by adjusting intangible elements through which perception of the product can be altered without needing to physically vary it.

My interviews also attest that there is a tendency in the Finnish housing industry towards simultaneous standardisation of products on the level of product structure and production process, and their diversification and personalisation with respect to the customers. Developers are seeking to widen their product range but with increasingly standard parts and processes. Effort is put to identification of those components of the dwelling product that can remain the same and those that should be diversified. At the same

time, the localness and one-off nature of building and the professionals' inherent preference for change work against standardisation and centrally imposed concepts.

Reconciliation between the push towards standardisation/duplication and the uniqueness of buildings as artefacts poses a challenge to architectural design. Housing architecture currently is largely disconnected from residential product development. A lot of the realisation of the design objectives identified by developers is random. The developers criticised architects for concentrating on user-insignificant details of building exterior at the cost of interior space. The quality of regular dwelling design was deemed mediocre.

Based on the developer interviews I could discern several bottlenecks that hinder diffusion of new concepts, diversification of the offering and realisation of user-centredness in different phases of industrial housing production. These complement the systemic barriers of diversification in housing identified by previous research (Krokfors 2010) from the viewpoint of residential developers. Some of the key challenges that product innovators in the housing industry according to my study need to overcome are:

- The regulation bottleneck:  
What is allowed by the system?
- The user agency bottleneck:  
How are users represented in the process?
- The innovation bottleneck:  
How to breed transformative product ideas and initiate change?
- The value network bottleneck:  
How to find good partners and manage collaborative product development efforts?
- The realisation bottleneck:  
How to get a pilot project built and ensure that it meets the initial objectives?
- The adoption bottleneck:  
Will users find and value the outcome?
- The diffusion bottleneck:  
How to make it again, and better?



My second empirical case examines the dwelling product *in use*, as defined by residents representing five different groups and as reflected in their everyday experiences. The main interest was in understanding the reciprocal relationship between individual users and dwellings as artefacts, with the aim of diminishing the identified gap between knowledge on user needs and the designable attributes of dwelling. I was focusing on two topics: how users define dwelling as product, and what kind of strategies they employ for making the dwelling product to fit their lives.

The notion of user can be seen as the production system's means to dominate people by assigning them a predescribed role and divesting them of strategic power. The industrialisation of building, the professionalisation of design, and the emergence of a housing market have necessitated anonymisation and abstraction of the user of housing. However, the term user also has positive implications. It renders visible the active human agent interacting with artefacts and enables the investigation of the two together.

The realisation of user needs in housing can be depicted as a cyclical process consisting of interpretation of users and their needs by designers and other professionals, translation of the needs into product attributes, and appropriation of the finished products by users. In the process, powerful structures are at play by which the user is becoming constructed into the dwelling product. These include culture, housing ideology and policy, norms and regulation, available technologies, as well as historically evolved dwelling types and dominant designs. There is engrained in each of them an understanding of user that becomes mediated to the end product and is detectable in its designed features.

In industrial housing production, the relationship between the dwelling product and user is locked. Users are in most cases denied control of products beyond superficial modification. The relationship of users to dwelling design is not direct but mediated through the structures by which the system produces the user. Also, the understanding of user is fragmented among many professions within the system. The housing professionals' conception of user, the nature and utilisation of user knowledge, and agency of users in the process critically influence the realisation of user needs in housing production.

I have in Chapter 5.1.2 listed some implicit stereotypical perceptions of the user that seem to prevail in the field. The housing professionals also in my data referred to users as passive and conservative, which may hold some truth but also provides convenient justification for continuing the business as usual. The regime by keeping the users at a distance from housing design and delivery protects its status quo. Other researchers have noted the denial of user in avant-garde architectural culture. Advocates of user-centred design on the other hand seem to share an implicit trust to users' fundamental goodness and inventiveness and often undermine the value of professional expertise in design.

The actual construction of dwelling in the lives of residents happens when they experience and interact with specific, tangible dwellings in use. In the user study, I approached dwelling as an *oeuvre*, an always unfinished artefact in process that is actively used, given meanings and transformed by people and in this way continues to evolve during its entire lifecycle. Inspired by the writings of Michel de Certeau, Jonathan Hill and Elizabeth Shove, I recognised residents as active and creative individuals who make use of various strategies of their own for appropriating the dwelling product along their individual valuable ends and thus participate in value creation during use.

When talking about their housing history, their present dwelling and their housing dreams, the users elicited collections of positive and negative dwelling attributes distributed across the levels of built form. Unsurprisingly, the material revealed two concentrations of attributes: the location of the dwelling and quality of the immediate environment, and the spatial and functional qualities of the dwelling proper. The users' evaluation of their living environment was predominantly positive, whereas the quantitative, functional and qualitative properties of their dwelling received mixed reviews. In accordance with previous research, good transport connections, closeness to nature, peacefulness and safety were valued by the users in the area level. Housing architecture in an aesthetic meaning did not surface in the material.

There were certain shared characteristics in each user group. The persons with disabilities often had less privacy in living. They had also negotiated many enhancements to their dwelling, having lead user characteristics. The immigrants in general were satisfied with their dwelling but experienced some social alienation. People with an untypical job due to irregular daily rhythm and income fluctuation differed from the average resident. Job uncertainty prevented them from settling down and investing into dwelling. The housing choices of single

parents had many times been forced and their dwellings had changing number of residents. The right-of-occupancy residents were less satisfied with their dwelling and typically had more unfulfilled housing expectations. The affluent future Eiranranta residents had had the resources to fulfill most of their housing needs. They emphasised comfortable urban living and the investment value of dwelling.

The users typically connected a component of dwelling (“parking hall”) with value (“comfort”). The study thus reveals connections between user value and dwelling features. The dwelling product as described by the users can be defined as a set of attributes with varying consistency and scope where designable elements across the built hierarchy are assigned value depending on their congruence with the needs and preferences of the resident. Individual persons according to my study value the attributes of dwelling slightly differently, emphasising for example sensibility, aesthetics or social status.

Valuable user experiences and needs constitute chains of interlinked design requirements penetrating the built hierarchy. Multiple designed elements in control of different agents need to conjoin to create user value in dwelling. A single element can contribute to the fulfilment of several experiences or needs, while a given need can be met by various elements or combinations of elements depending on the specific dwelling and the user. Moreover, there is variation in how users interpret the elements of dwelling based on their personality, attitude towards housing and previous experiences. This means that the relationship between a user and a dwelling remains partially unpredictable. The meaning and importance of dwelling features apart from most basic functions is relational. It is therefore difficult to predetermine the value of a specific dwelling design to user.

My research points out three instances where users come to question the standard dwelling. One is when they have special needs or are in a life situation that clashes with the mainstream dwelling. I describe in Chapter 5.3.3 how precarious shift work, shared parenting and physical disability constitute types of “non-standard use” that pose new requirements for designable elements of the dwelling product, such as technology and space. Another instance is when users contest an element of dwelling as part of their negotiation between own preferences and the offering. The sauna in the study was a component that divided user value, being either a necessity or an unwanted expensive feature. A third example, directing criticism at the present functionally segregated dwelling type, was several users’ wish for “one extra room” open to multiple uses.

It is difficult to tell what in the results indicates differences in the users' lifestyles and housing preferences, what is explainable by their socio-economic position, family situation and life phase, and what is consequence of the material properties of their dwelling. It is evident that dwellings as artefacts have influenced the experiences of users. However, my study shows that regardless of eventual differentiation of lifestyles, there is diversity in user needs concerning designable elements of the dwelling product, and that residents actively weigh the value of the elements as they navigate in the housing market.

I was able to detect a wealth of strategies that the users had employed for adapting the dwelling product to their purposes. They target various levels of built environment, forming a scale from materially "weak" to "strong". Some users' relationship to dwelling was passive, characterised by making do with defects. On the level of objects, interior decoration as (only available) means of personalisation was emphasised especially among young female renters. Quite many participants had also upgraded the technical equipment of their dwelling by themselves. Customisation service at purchase, publicly subsidised modifications to dwellings of persons with disabilities, and renovations realised by landlord in conjunction of removal are examples of strategies impacting the built form that are enabled by corporations or authorities. Many users had undertaken renovation projects on their own, in some cases extending deep into the building. A few had constructed their own house in close collaboration with professional designers.

The users had also adopted economic strategies in the market and social strategies for controlling privacy and social relations. As a generalisation, the inhabitants of large rental housing estates quietly endured the social disturbances met by them, whereas the way of living in terraced and semi-detached houses was characterised by more communality that had led the residents to forming allies among neighbours. People living in high-end inner-city owner-occupied flats, despite stressing equality in housing, through choice of area, physical means and technology had employed subtle strategies of exclusion.

My dissertation suggests seeing the dwelling product as a platform for strategies of users, producers and other actors to conjoin, interact and build upon each other in time. My data shows that the relationship of users' strategies to dwelling can be additive or subtractive. They can employ an expansive strategy e.g. by purchasing a secondary dwelling or seek for optimisation within their given dwelling. Users

combine long-term strategies with short-term tactics. Some have more resources and adaptation skills. Owners evidently can control deeper levels of form than renters. However, my results clearly indicate that possibility to personalise one's dwelling regardless of tenure increases its user value.

Aesthetic reflexivity in the sense of conscious construction of lifestyle by consumption is not evident in the data. Housing design, for instance, was mostly discussed in a functional meaning and in conjunction of the interior space. However, the study demonstrates how existing designs in the market and features of their past and present dwellings impact people's experience of dwelling and expectations of the attainable. Memories and learning from previous dwellings, observing the built environment and how others live, housing in other countries and exemplary designs in the market and media influence people's experiences and strategies of dwelling and provide aesthetic references. Choices are driven by simultaneous needs for social conformity and individuality.

Housing choices had often resulted from chains of events beyond the control of individuals. Both external trends (economic fluctuation), social factors (wish to get away from an unpleasant area), life events (birth of child, separation, illness), and issues instigated by the physical dwelling (renovation needs) propel housing pathways. Users' choices were characterised by lock-ins (self-imposed or other constraints narrowing down the range of alternatives) and trade-offs (giving up or downgrading on some attribute of dwelling in order to gain on another attribute estimated to be more valuable).

A feeling of temporariness characterised many users' experience of dwelling and weakened their commitment to it. Decision to settle down motivated people to personalise and improve their dwelling. However, an idea of temporariness may also help people in coping with mismatches in dwelling. Their everyday experience most often was positive despite unfulfilment of long-term housing goals. Many users were well aware that their dream dwelling most probably would remain unattainable for them. Reflection of dreams with real-world constraints had led to what I call *adjusted dreams*. The users had lowered their expectations while retaining the most valuable attributes of their dream dwelling in an altered form. Housing dreams regardless of their realisation bring into the everyday a sense of future and help people in explicating their housing preferences.

Everyday life brings contingency into the relationship between the user and the dwelling product. As needs change, the design of the dwelling can become unfit. The value of specific dwelling attributes to user evolves in

time. A match between a dwelling and a user according to my material is often momentary. Change and unfulfilment of dreams are characteristic to the experience of dwelling. Turns in housing pathways enrich the experience of dwelling and evoke new dreams and desires. Dwellings in use come to serve the fulfilment of our needs in countless individual ways, some of which are out of reach of professional design acts. This makes complete user-specificity in industrially produced dwellings unattainable and even unnecessary.

The main contribution of my dissertation to housing studies is that it increases understanding on the reciprocal relationship between users and dwellings as material artefacts, bridging the gap between user knowledge and design knowledge in housing. The study calls for inclusion of the material dwelling artefact to research on residents' needs and propagates the importance of a "small scale, from within" perspective in Finnish housing studies dominated by quantitative and regional focus. My research posits the individual resident into focus and acknowledges her as active agent who has a stake in appropriating the products delivered by the industrial housing system, and many of whose preferences, needs and attitudes regarding dwelling change along life.

## 6.2

# Designing the dwelling product

### THE CONCEPTUALISED DWELLING: AN OBJECT OF DESIGN BEYOND BUILT FORM

To return to the main research question: How to understand dwelling as a product and object of design? My theoretical exploration and the results of the empirical cases indicate that dwelling as product extends beyond housing architecture, constituting a heterogeneous composite of designable elements with varying degree of materiality distributed across the levels of built form and also outside of it.

Dwelling as product despite its singularity and locatedness bears some resemblance to other industrial products. It is possible to conceive dwelling as a set of attributes that combine to provide value to the user. What distinguishes dwelling from other industrial products is its embeddedness into the hierarchy of built environment.

As conclusion of the facets of productness revealed by the research, I propose a conceptual model of dwelling as product in the context of design (Figure 46, see also Figure 11).

All elements of the dwelling product together define a space of possible designs within which meaningful qualitative variation can take place. The limits of variability of dwelling and its customary elements are determined by the housing regime collectively, including available technologies and production methods, regulation, users and the market.

There are some essential elements in the dwelling product related to the basic needs of dwelling that are universally valued by residents and taken for granted in regular dwelling design, thus remaining rather uniform and undifferentiable. There are other inessential elements with more subjective value that can be qualitatively differentiated by design.

Elements on the surface levels of built form are rapidly modifiable and in control of individual residents. The deeper into the material hierarchy an element extends, the slower and more complicated its manipulation becomes. Elements on different levels are in control of different professional agents and have followed their own evolutionary trajectories. However, the act of inhabitation connects the heterogeneous elements together into a seamless whole.

The elements of the dwelling product are object to strategies of producers, users and other agents by which they seek to adapt the dwelling product to their valuable ends. The dwelling product is shaped through interactions of agents. Its elements mediate between the realms of industrial mass production and everyday living.

As evidenced by my cases, there is some variation in what elements individual agents emphasise and target with their strategies. Basic functions notwithstanding, the elements of the dwelling product are assigned meaning and value individually. Different constellations of valuable dwelling attributes emerged from my material.

Design operating within the systemic dwelling product has many possibilities to add value. It can target a single element, a level of form, or combine elements across the system. The physical dwelling and building remain the most important designable elements of dwelling. However, home technology, services before and during use, aspects of the social community, and ownership of dwelling are examples of emerging design areas with potentially transformative role in value creation and differentiation of the offering.

In line with the findings of research on product design, my study indicates that also in the field of housing two directions of expansion of the object of design can be

recognised: remote design dealing with strategic and conceptual issues, and immediate design necessitating understanding of and collaboration with users in specific local contexts.

FIGURE 46.  
Dwelling as product.

#### DESIGN STRATEGIES FOR THE SYSTEMIC DWELLING PRODUCT

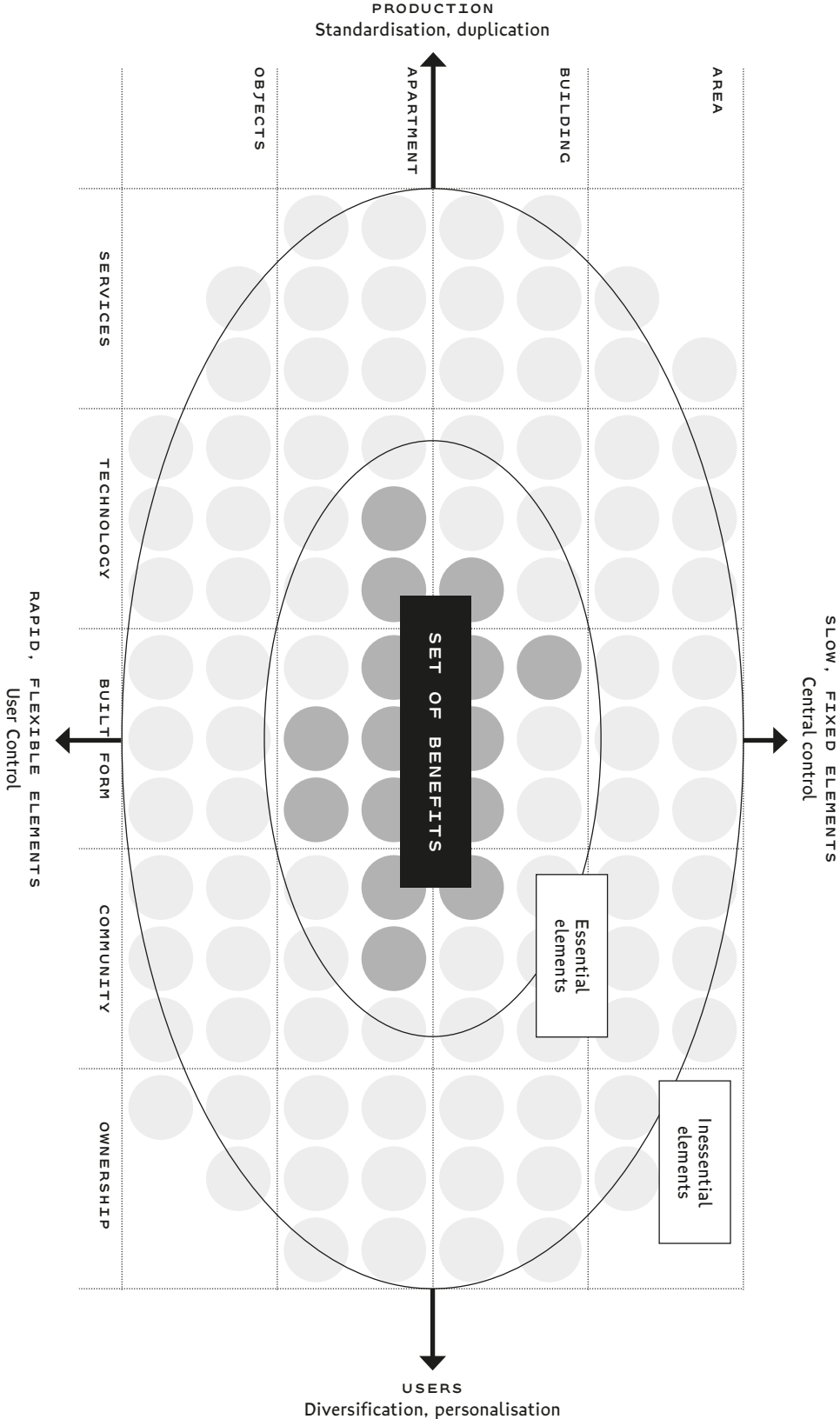
Producers and users of housing have their strategies for aligning the dwelling product along their goals. What strategies are available to designers and how could these contribute to the diversification of housing production and the search of mutual value? What kind of new design opportunities does my explanation of dwelling as product open up? To demonstrate the implications of the findings of the study to design of dwelling, I shall next contemplate a couple of potential approaches for rendering the systemic dwelling product as an object of design. The examples and strategies discussed here are not to be seen as final results of the study but rather as tentative suggestions of what the understanding of dwelling as a systemic product could mean to actual design practice.

Some parts of the dwelling product concerning user value are solved relatively well by regular housing design. Other parts are beyond meaningful differentiation or can easily be adapted by the residents themselves. There are, however, areas in dwelling aside traditional architectural design where alternative design approaches could be beneficial.

Several of the approaches presented below have been proposed by design theorists before, but continue to be poorly utilised in industrial housing production. The ideas of Thomas Mitchell (1993) about user-responsive design methods in architecture including collaborative design, contextual design amplifying specific physical conditions and intangible design that takes human intentions and systems as its object are still valid, as are Anna Klingmann's (2007) suggestions of thinking on architecture more in terms of the authentic experience and identification made possible by it.

Following nine design strategies that could facilitate the generation of more diverse and user-centred urban housing can be proposed on the basis of my research. The strategies are divided into ones with focus in remote, product, and immediate design. Efforts of employing some of the strategies are visible e.g. in the Finnish housing concepts.





REMOTE DESIGN :  
DESIGNING FOR DIVERSIFICATION  
WITHIN THE HOUSING SYSTEM

1. *Strategic differentiation of dwelling products in the market* to fill gaps in the offering and meet underserved user needs. Housing concepts with their differentiated promises at present aim at this. Strategic dwelling design requires sensitivity to emerging demand, capability to innovate and a time perspective beyond the next housing project. Figure 47 shows examples of value-based differentiation strategies for compact dwellings. Additional ways for inducing variation into dwelling – partly overlapping with the ideas presented here – are listed in Table 5. They are inspired by the generic modes of technological innovation/variation (Fleck 2000).
2. *Resolving the tension between standardisation and uniqueness in dwelling.* Identification of what elements of the dwelling product from the perspective of users can be standardised (or simplified) and where more design variation or personalisation is needed. This would support diversification of the offering without losing the advantage gained from industrial production. Again, duplicable concepts with some variable parts can be means for this. Example of a simple strategy for balancing duplication and diversity in the area level is seen in Figure 48.
3. *Systems to enable in-depth mass customisation or co-configuration.* Allowing users to configure (some elements of) their own dwelling within a framework set by professionals would diminish the contingency between industrial dwelling products and their users. Such systems could also enable individual allocation of the resources of living. This requires developing open, modular building systems that pave way for “open source building” and “housing on demand”.

PRODUCT DESIGN :  
DESIGNING FOR THE EVERYDAY  
EXPERIENCE OF DWELLING

4. *Systematic morphological and typological diversification of housing architecture* by creative adaptation of avant-garde trends but also through utilisation of more structured methods from product design (such as the morphological matrix, see Zwicky 1969). In light of my data, more emphasis should be put to enriching the range of available dwelling types especially concerning small flats. Architects here could also draw inspiration from historical architectural lineages of descent.

5. *Attainable re-interpretations of desired dwelling forms* present an interesting design problem in housing production that was opened up by the user study. For instance, how to translate the valued features in detached houses such as control over one's own property and excess space into more urban and affordable designs? Accordingly, some features from urban housing could be transferred to detached houses.
6. *Reconstructing the aesthetic and sensory experience of dwelling* lost along industrialisation. Design here would focus on the surface levels of dwelling, approaching it as an interface between human body and the material as well as natural worlds. Designers could enhance the experiential quality of mass produced dwelling e.g. by introduction of pleasurable visual and tactile properties.
7. *Everyday practices and situations of dwelling as object of design.* A strategy that targets the overall functionality and usability of dwelling with the intention of integrating home technology, energy systems, services and built form into responsive environments that support the residents' everyday behaviour and can have an inbuilt capability to direct users towards more sustainable behaviour. Approaches like service design or time-based design could be utilised.

IMMEDIATE DESIGN:  
DESIGNING WITH USERS AND  
FOR DWELLINGS IN USE

8. *Connecting users to urban housing production* in a mutually value-adding way. The designers' task would be to translate socially created product ideas into high quality designs that exceed the users' immediate expectations, as well as to develop co-design methods that enable the housing system to respond to user demand more efficiently. This could mean unique one-off housing projects developed together with residents or "thematic housing" targeted at small niche markets. Easy ways to access novel housing solutions should be provided also for non-activist users. A further goal should be to develop systematic ways for learning from users and integrating (lead) users to residential product development.
9. *Design interventions to existing dwelling stock* improving its sustainability, accessibility, technical and aesthetic quality, and suitability to special needs. Design tasks include facilitation of user-centred renovation projects in collaboration with residents and housing companies, and development of tools, products and services for supporting users' own adaptive strategies

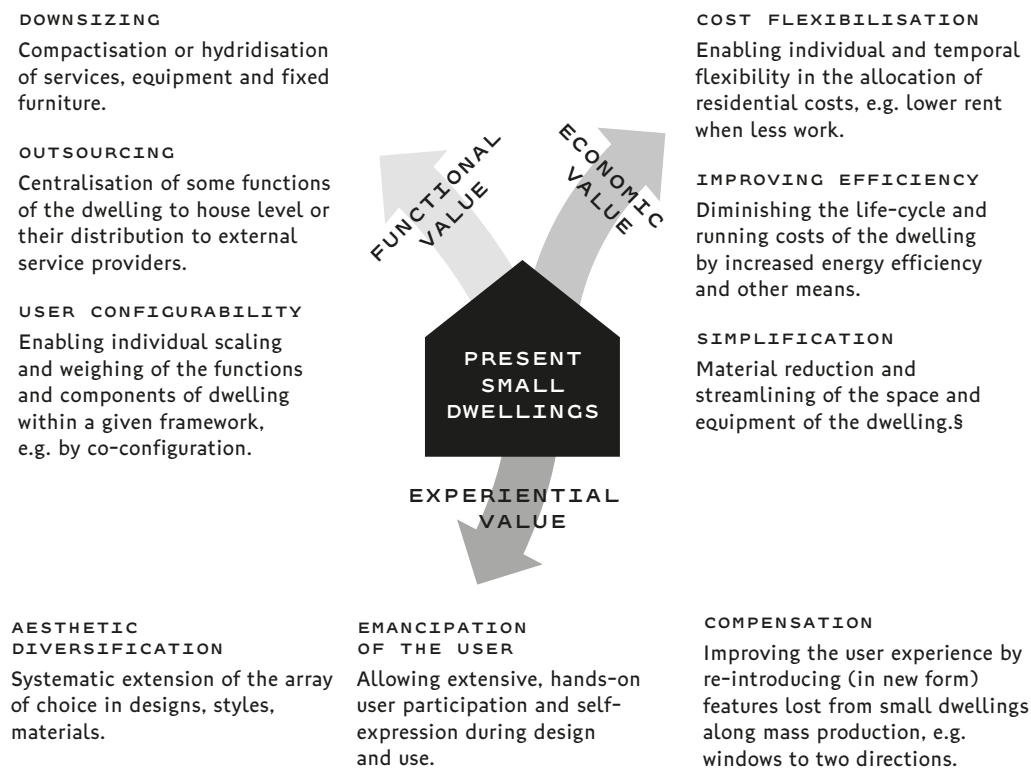
in existing dwellings. This strategy suggests producers and designers following along the use phase of dwelling, swiftly responding to changing needs by modifying the dwelling product. In line with Stewart Brand's (1994) idea of "scenario-buffered building", dwellings could already in the design phase be programmed to be more adaptive to change.

My study indicates that design for user experience necessitates design across the hierarchic levels of built environment. Designers of the systemic dwelling product need to deal with identification of valuable combinations of elements of dwelling and their integration throughout the scales of urban neighbourhoods, buildings, dwellings and domestic objects. This calls for collaboration between the stratified design professions and designerly skills that go beyond the established design tasks in housing.

What the dissertation at large points out is the role of conceptual design in user-centred diversification of housing. Aside from buildings and dwellings, the underlying "abstract designs" of dwelling (such as housing concepts) can be intentionally modified with potentially transformative effect to wider populations of dwellings.

TABLE 5.  
Modes of technological innovation/variation (Fleck 2000) as applied to dwelling, leading to possible design strategies of the systemic dwelling product.

FIGURE 47.  
Value-based differentiation strategies for compact dwellings. 24 Living, University of Art and Design Helsinki and vvo rental housing corporation, author with Tero Heikkinen, 2008.



	DESCRIPTION (FLECK 2000, 264)	EXAMPLES IN THE CASE OF DWELLING
MUTATION	Changes via the reproductive process	"Natural" incremental diversification of the dwelling stock via singular, local, individually designed housing projects (see Chapter 3.4.3). Can be facilitated by enhancing the role of creative architectural design in housing production.
SIMPLIFICATION	The stripping down of entities to bare functional essentials	Stripping down of the construction, materials and equipment of the dwelling product to enable affordability (as in BoKlok) and/or completion of the dwelling by resident according to own preferences (as in Neo-loft).
INTEGRATION	The synthesis of previously separate functional systems into new more inclusive single systems	Integration of the systems and services in built environment such as energy, waste management and transport across the levels of city, buildings and dwellings to create sustainable, responsive living environments that induce valuable transformations to living.
ELABORATION	Accretion of new features onto a basic functional entity	Adding new lifestyle-based, experiential or functional features to the mainstream dwelling product. Amplification of user experience by increasing the aesthetic and sensory richness of dwellings ("hedonistic" architecture, Hill 2003). "Thematic living" targeted at specific lifestyles or niche markets.
STANDARDISATION	The emergence of common interfaces or functional boundaries round technological entities	Standardisation of the interfaces between components and sub-systems of dwelling. Development of open, modular building systems to enable in-depth mass customisation and co-configuration of individual dwellings, eventually leading to "open source building" and "housing on demand".
INCREMENTATION	Improvements of components within the bounds set by larger functional systems (leading to technological trajectories)	Fine-tuning or updating of specific elements of the dwelling product to add user value, e.g. sustainable space-saving kitchen as design problem.
CRYSTALLISATION	The emergence of new artefactual elements from working practices, procedures or software	Emergence of novel housing concepts or other product or process innovations as outcome of successful housing projects, cross-disciplinary partnerships, structured concept design activities, technical product development, etc.
CONFIGURATION	Combinations (often nested) of new and old components to perform new tasks	Development of value-adding physical enhancements and services of dwelling that make use of and plug into the existing built environment.
INNOFUSION	Innovation during diffusion – continued development during actual use, through various forms of "learning"	Extension of the role of producers into the realm of use and the role of users into the realm of production (Chapter 4.4). Continued improvement of the existing dwelling stock, collaborative product development with (lead) users and user communities, learning from social innovations in housing.
RESOLUTION	Improvements in functional systems via the resolution of bottlenecks in development	Resolution of the bottlenecks in housing production related to regulation, user agency, innovation, value network, realisation, adoption, and diffusion of novelty (Chapter 4.4.7).
CROSS-FERTILISATION	Transfer of subcomponents from one functional system to another	Transfer of design analogies, concepts and business models from other fields to housing (e.g. "housing as service").
IMPLEMENTATION	Transfer of functional systems into new application contexts	Transfer of successful housing models, types and dominant designs as well as design aesthetics or technology from one (national) housing regime to another.



FIGURE 48.

A simple strategy for balancing replication and diversity in the area level. “Standardised diversity” created by replicating the same house designs along two canals in a variable order. Amsterdam, Eastern Docklands, Java Island. Urban development plan by Sjoerd Soeters 1995, buildings designed by various architects. Photographed by the author in 2008.

## The housing system revisited

The systemic design problem of user-centred industrial urban housing production obviously cannot be solved by a single piece of research. However, my study offers some practical implications to the housing system that could provide seeds for change.

- I argue that social and technological change necessitates partial reconceptualisation of dwelling as a product and object of design. My empirical cases attest the *expansion of dwelling as product beyond housing architecture*. The study proposes that transfer of learnings from user-centred product design research to the field of housing would increase understanding of some of the new aspects of productness of dwelling.
- I suggest that a more *conceptual and strategic approach to housing design* could help in resolving some of the systemic barriers for diversification in housing and facilitate the reconciliation of the demands of users and producers.
- The study highlights the *reciprocal relationship between people and dwellings*, showing that actual material dwellings influence the user experiences, housing preferences and expectations of people. Many users also actively and creatively seek to adapt the dwelling product to their valuable ends. This should be better acknowledged in housing research, design and production.
- My research demonstrates the *relationality of user value* in dwelling. The meaning and value of specific dwelling features to users is not universal but individually defined and susceptible to change. This erodes the possibility of a total fit between people and dwellings. This notwithstanding, giving the users themselves greater leverage in determining the individually important features of their dwelling even in urban housing production would enhance its user value.
- The dissertation stresses the *transformative societal power of expert design*, pointing out also some of the fallacies of user-centred design in housing, such as overt trust in users' capabilities and innovativeness on one hand, and reluctance to endow them with more than superficial power on the other hand. The study emphasises the importance of user-value-adding "creative leaps" and design-driven innovations by professional designers in diversification of housing.



Rather than conceiving the development towards more user-centred and diverse urban housing as straightforward need satisfaction where people are asked how they would like to live and provided with exactly that or given full authority as designers, my study calls for critical questioning of some of the basic assumptions behind the prevalent way of designing and producing dwellings. This could provide seeds for housing solutions that, to use Anna Klingmann's (2007, 324) words, exceed the expectations of users by "initiating meaningful transformations that reach beyond established boundaries to create a breakthrough in value". The challenge for professionals working within the tight constraints of industrial housing production is to be able to fully harness the creative, transformative power of design to come up with viable, sustainable designs.

Increased individuality of housing does not mean accumulation of ever new gadgets and experiential features to dwellings. A truly user-centred approach would seek to identify those elements of the dwelling product that are most meaningful or valuable to residents or where their needs most diverge, and take them as objects of design with the intention that elements considered less valuable by individual users could be downtuned or replaced with more valuable ones. This would imply a balancing or subtractive rather than additive approach to the development of dwelling. Also, a polyvalent, generic dwelling is not necessarily less satisfactory to a user than a highly personalised dwelling.

A turn towards the users requires changes in the competencies and organisation of design activity in the housing industry. To be able to deliver user-centred products, producers need to build a user-centred design infrastructure, enhance the performance of user-centred design in residential product development and individual housing projects, and integrate user-centredness into business strategy (cf. Jokela 2001). The role of design as well as the role of users in residential product development should be strengthened. The expansion of dwelling as an object of design creates demand for inclusion of new specialised actors into the housing regime with expertise in user-centred and collaborative design on one hand, and conceptual and strategic design on the other hand. Designers working with the systemic dwelling product need mediative and integrative skills.

Even if they were not in the focus of my study, public actors like policy makers, regulators and cities have an important role in transforming dwelling. They set the overall guidelines for the design of the dwelling product and have considerable power to direct production by means of



incentives and constraints (e.g. by subsidising user-initiated housing projects). My study indicates that the deeper into the built form a novel housing solution extends and the more transformative it is to users, the more public involvement it would seem to necessitate. One practical approach that could be contemplated on the basis of my study is selective relaxation of certain regulations to allow diversification. On the other hand, the authorities' role is to protect the interest of the user in the face of the industrial production system and also to prevent harmful expressions of individuality.

The demand for design diversity and user participation in urban dwelling calls for expansion of the value base of housing production and acceptance of user value in all its richness and complexity as a driving force. We can begin by questioning our implicit perceptions of the user: whom are we making dwellings for? Instead of delivering safely average solutions, the housing system collectively should aim to recognise meaningful value differences among humans, embrace them as inspiration and challenge for creative design, and seek to strategically cultivate the production of dwellings towards their direction so that the dwelling stock as a whole would serve people better in their everyday life and quest for personal fulfilment.

#### 6.4

### Reliability and validity of the study

To judge the overall quality of the research its objectivity, reliability, internal and external validity, and utilisation should be assessed (Miles & Huberman 1994, 277–280). I have aimed at transparent description of the course of the research from data collection to analysis and conclusion drawing. I have also continuously sought to recognise my personal assumptions about the topic and minimise their influence to the analysis. The utter familiarity of dwelling to all of us sometimes makes it difficult to avoid interference of the researcher's subjective experiences to the explanation building. Theory-guided content analysis as well as my rigid analysis frameworks have provided means for ensuring the objectivity of the conclusions. Whenever more subjective remarks are presented, I have taken care to ground them on my expert knowledge gained from the applied research practice rather than on my own experiences of dwelling.

To ensure the reliability of the study, I have collected three separate data sets representing different viewpoints to dwelling as product (the housing concepts in the market, the developer interviews, and the user study concentrating on the experiences of individual persons). I have looked at both the dwelling artefacts and the experiences of people using and producing them. My two empirical windows to dwelling as product are tied together by design theory. The same theory-based analysis frameworks have been used across the data for interpreting both the housing concepts and the user data.

Further reliability to the user study is given by the fact that the original study was designed in collaboration with another researcher. The same probes kit with minor modifications was applied in several consecutive projects. Other researchers have previously interpreted parts of the user data in applied projects with outcomes that are not significantly contradictory to my findings. However, the material as a whole had not been properly analysed before.

Regarding the company interviews, the small number of informants can be seen as a limitation. Based on previous studies on housing concepts and with the concentration of the housing industry in Finland in mind, I would claim that the sample represents the industry sufficiently well for the findings to be valid. Homogeneity of the field was also stressed by the interviewees. Even with three participants, the analysis was quickly saturated. Insights of the company representatives were rather uniform and seemed to reflect a consensus in the field. The inclusion of more interviewees would probably not have significantly benefited the study. One must keep in mind that this data is biased towards business feasibility and profitability. Because the interviewees were leaders of new product development, the material also emphasises visionary and strategic issues more than is visible in actual housing production.

What could have been heard is the voice of housing architects and urban designers. Their absence can be justified by my focus in the aspects of dwelling beyond the scope of architecture. An additional gap of knowledge is between the case housing concepts and their users. I do not know how the residents living in houses built according to the concepts experience their dwelling, whether they perceive the concepts as beneficial, and how the specific attributes of concepts marketed by producers have actually influenced their housing decisions. However, my focus in this part of the study was in understanding the productness of dwelling from the perspective of production. The reception of commercial

housing products by users would provide an interesting topic for future study.

The main concern about the user study is that it was not designed according to my research questions. As pointed out, the wide scope of the user interviews to my mind makes them valid as research material. In retrospect, however, a method more specifically attuned to my topic could have yielded better results. Criticism can also be directed at the probes method and overall design of the user study. The self-documentation kit required a lot of effort from the participants, favouring active people with spare time, and not attracting busy or less motivated users. Many participants were socially active persons. More withdrawing or individualistic users probably were not reached by the method. Some participants in the elite group criticised the probes study as too laborious or downright childish and had not completed it. The study kit in these cases was mostly useful as framework for the interviews. The polarisation of participants along opposite ends of the housing market no doubt diminishes the generalisability of results.

Rationalisation, impression management and beautification are typical problems in user interviews (Miles & Huberman 1994, Hyysalo 2009). Some participants probably over-rationalised their housing choices. I have done my best to preserve the complexity of real-life choices in the analysis. The vvo and Asokodit studies were marketed to the residents in the name of the owners of their flats, which may have influenced the responses of some users. However, the data as a whole does not raise suspicions of significant beautification. The users' privacy was respected in the interviews and they were not pushed to answer unpleasant questions. Some participants became very emotional when reminiscing their housing career, which illustrates the sensitivity of the subject. But housing and dwelling also is a topic that people enjoy talking about. Many participants were proud of their home and happily opened their door for a researcher. The elite group, even if they did not avoid discussing sensitive issues, in general were more protective of their privacy.

The internal validity of the study can be measured by the credibility of its findings as an answer to the research question, whereas its external validity is related to generalisability of the results and their fittingness with theory. My objective has been to discern shared patterns as well as meaningful individual differences from the rich empirical material and link them with the theoretical framework of the study in a way that builds towards a scientifically valid conceptualisation of dwelling as product, without overlooking

the complexity and ambiguity arising from real-life contexts of use. An extensive literature base from the fields of design research, housing studies and architecture has been drawn on to provide an overall picture of the studied phenomenon and to validate the findings. Concerning external validity, I hope to have argued the contribution of the dissertation at the emerging intersection of design research and housing studies. Finally, it should be reminded that a qualitative case study like the one at hand does not aim at direct generalisability of the findings. It is rather the theoretical outcomes of the study that can be transferred to other settings and developed further through new cases.

My insistence on treating dwelling as a mass product can be seen as potential threat to the credibility of the study. To avoid this, I have tried to equally bring up features of dwelling that contradict its productness. My core argument is not that housing and dwelling is *only* a product just like other mass produced consumer products, but that it *also* has this (previously somewhat unrecognised) dimension of productness to it.

The main methodological and practical limitations of the product approach to dwelling and some of the negative concerns arising from the chosen research framing are:

- Looking at dwelling as a product disembeds it from its geographic environment and leaves its inevitable locality and spatiality out of focus. The product approach cannot capture the holistic sensory experience of a particular space and place.
- My emphasis on individuality and difference in dwelling somewhat overlooks its role as a basic necessity salient in social structure that the society seeks to provide to all. The content of dwelling despite local, quantitative and qualitative variation is relatively homogeneous. In the end, the possibility of its significant diversification beyond regular architectural design may be limited.
- The product approach can be criticised as forcing of the values and logic of the capitalist production system upon our most private realm – the ultimate subjugation of the home to the seductive powers of the consumer society. The conception of dwelling as product can at worst become a superficial means to create illusory experiential value to the resident while actually divesting her of any real, transformative power. The impact of the commodification of dwelling to social segregation in living areas and cities would also require attention.

By choosing to examine housing and dwelling as a product in the context of design research, have I forced it into a framework that does it injustice, distorts it, or divests it of some essential characteristics? Is my goal to identify parallels between dwelling and other industrial products and speculate the implications of that to design a purely theoretical endeavour without relevance to real-life housing design, or to housing studies, for that matter? What is the practical benefit of reconceptualising dwelling as an object of design, and what are the viable ways in which strategic and conceptual design could add value in housing production and people's everyday life? Some of these questions remain to be answered by further research and application of the findings to real-life design problems.

Methodologically, the study has been an attempt to transfer approaches from user-centred design research to the field of housing. That as such arguably makes it worthwhile as academic contribution. My designerly "theory" of dwelling as product no doubt deserves further development and critical questioning. I hope that the study nevertheless provides knowledge on the impact of ongoing social and technological change to housing and housing design that is relevant to the research community and practitioners alike.

## 6.5

### Seeds for further research

The dissertation in many respects feels merely an opening. Some areas have only been charted superfluously, to provide preliminary markers for future research. My initial task of trying to understand dwelling as a systemic product in the context of design has at places proven to be overwhelmingly broad. The end result perhaps provides a splintered, kaleidoscopic view rather than razor-sharp dissection of the dwelling product. However, the work has opened up many new questions and research directions, the examination of which potentially could deepen its findings. Some of them are listed below.

- Developmental study on residential product development and value creation process from the perspective of user control.
- User experience of specific housing concepts. How residents of dwellings built according to housing concepts perceive the concepts. To what extent the benefits suggested by concepts affect purchase decisions and actualise during use.

- Detailed documentation and analysis of the development process of a real-life user-initiated housing concept with focus on the role of design(ers).
- Concepts on different levels of built form, e.g. in the urban scale.
- Deepening the evolutionary approach to dwelling by historical analysis of the evolution of dwelling designs (floor plans) or its specific components.
- Studying the reciprocal interaction of dwellings and users further. A longitudinal case study on the life cycle of a building and its dwellings as they are modified by successive users in time. Research on the visible trails of users' strategies in the dwelling stock, using photographs from online real estate portals as data.
- Research collaboration across the levels of built environment, combining insights from multiple academic disciplines dealing with the systemic dwelling product.
- Laying grounds for a "theory of interior architecture" that looks at topics in the intersection of housing design and product design from the "inside out".



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& APPE



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## Description of the case projects

The applied research projects from which the empirical data of the dissertation originate from are presented below in chronological order, with explanation of the author's role in them and description of the material that they have provided for the dissertation. During the projects, the author was working at Future Home Institute at the University of Art and Design Helsinki (from 2010 Aalto University School of Arts, Design and Architecture). Tekes is short for the Finnish Funding Agency for Technology and Innovation.

### ERILAISTUVA ASUMINEN (EA) [DIVERSIFICATION IN HOUSING], 2006–2008

Public research project funded by the Finnish Ministry of the Environment. The partners were University of Art and Design Helsinki (Future Home Institute), University of Kuopio (Department of Social Policy and Social Psychology), Helsinki University of Technology (Centre for Urban and Regional Studies and Laboratory of Urban Planning and Design), University of Helsinki (Department of Geography) and VTT Technical Research Centre of Finland (Building and Construction). The research was led by professor Anneli Juntto.

The project focused on the problematics of differentiation of housing preferences and diversification of the offering of housing in Finland. Research contributions included statistical analysis of population-level societal change, foresight on the future of housing and living, reflections to urban planning, and research on housing preferences and choices. The author, together with Susanne Jacobson, was in charge of a subproject looking at the

lifestyles and needs of individual users. A study on the domestic user experience of persons with disabilities was conducted in order to challenge and improve the current state of accessible design. The study introduced innovative users who personalise their accessible products and environments.

The outcomes are published in: Juntto, Anneli (Ed.) 2010. *Asumisen unelmat ja arki: Suomalainen asuminen muutoksessa* [Housing dreams and everyday living: Finnish housing in transformation]. Helsinki, Finland: Gaudeamus. The author has co-written one chapter of the book as well as two conference papers about the results of the user study (Jacobson & Pirinen 2007a, 2007b).

Input to the dissertation: User interviews U1–U5 (5 interviews) conducted as part of a probes study (see Appendix 3). The participants were persons with physical disabilities who were living independently at home.

### ASIAKKUUDEN HALLINTA ASUMISESSA (AHAA) [MANAGING CUSTOMERSHIP IN HOUSING], 2006–2008

Public research project funded by Tekes and 6 companies: Asokodit (right-of-occupancy housing provider), Agenteq Solutions (IT solutions for customership management), G4S (security services), Kone Elevators, Lassila & Tikanoja (environmental management services), and VTT Building Services. University of Art and Design Helsinki (Future Home Institute) was responsible for the execution of the project. The author acted as project manager, and as principal researcher together with Susanne

Jacobson. The project was led by professor Jarmo Suominen.

The project aimed at developing user-centred service concepts and customership management models for (right-of-occupancy) housing. The researchers conducted an online survey (n=628) that provided data for lifestyle-based segmentation of residents as well as information on their needs and attitudes towards services. A qualitative user study utilising the probes method was realised with 13 of the respondents in order to deepen



the information. This led to ideating new service concepts for housing and creating use scenarios. The project also comprised company interviews and international benchmarking of housing concepts and service models in United States, South Korea and the Netherlands. Results of the project have been published mainly as internal reports.

## 24 LIVING (24L), 2008–2009

Industry-led research-intensive development programme funded by Tekes and five companies, each with their own projects: Elisa (communications services provider), Igglo (real estate broker), Kesko (trading company), SRV (construction company) and VVO (rental housing provider). University of Art and Design Helsinki (Future Home Institute) was responsible of the research tasks in the projects. The programme was coordinated by Finpro and included collaboration with MIT (House\_n Research Group). The research tasks were led by professor Jarmo Suominen.

The objectives of the programme were to develop mass customised offerings of spaces, products and services that respond to everyday situations of living, to identify relevant value networks, and to engage users in innovation processes. The author's role in the programme was focused on two subprojects looking respectively at optimisation of small dwellings (for VVO, the author as project manager and Tero Heikkinen as main researcher) and new scalable concepts for mixed-use urban area development (for SRV, realised by the author

Input to the dissertation: User interviews 023–035 (13 interviews) conducted as part of a probes study (see Appendix 3) by research assistant Kirsi Turkia. The participants were residents of right-of-occupancy dwellings in the Helsinki region. They represent four lifestyle-based user segments that were identified in an earlier phase of the study (“Ordinary”, “Active”, “Home-centred” and “Individualistic” residents).

independently). The results have mainly been published as company-specific reports.

Input to the dissertation: User interviews 006–022 and 036–044 (26 interviews) conducted as part of two probes studies by project researchers Kirsi Turkia and Renita Niemi (see Appendix 3). The interviews originate from two separate subprojects of the 24 Living programme. Interviewees 006–022 are residents of rental dwellings owned by VVO. They represent three groups that were identified by VVO as their key customers: immigrants, people with “untypical work” and single parents. Interviewees 036–044 are persons who had purchased a flat built by SRV in the new upmarket Eiranranta residential area in Helsinki. They can be described as members of the socio-economic elite. The conceptual design example presented in Chapter 6.2 (differentiation strategies for compact dwellings) originates from the VVO optimisation project.

U24	F	58	Salesperson, pensioner	Vantaa, Jokiniemi	Block	1992	Right-of-Occ./ASO	3	45	1a	14	AHAA	Home-centred	30.10.2007	KT
U25	M	28	Project manager	Helsinki, Laakso	Block	1951	Rental	2	26	1a	6	AHAA	Active	25.10.2007	KT
U26	F	53	Construction draughtsman	Helsinki, Pikku Huopalahti	Block	1997	Right-of-Occ./ASO	3	46	1a	10	AHAA	Home-centred	31.10.2007	KT
U27	F	39	Hairdresser	Helsinki, Kallio	Block	1961	Owner-occ.	3	55	1a	1	AHAA	Home-centred	26.10.2007	KT
U28	F	59	Pensioner	Kerava, Jaakkola	Block	1993	Right-of-Occ./ASO	3	63	2a	4	AHAA	Home-centred	25.10.2007	KT
U29	M	33	Stevadore	Helsinki, Meri-Rastila	Block	1993	Right-of-Occ./ASO	4	75	2a, 1c	3	AHAA	Active	29.11.2007	KT
U30	M	57	Lorry driver	Vantaa, Kuninkkala	Terraced	1997	Right-of-Occ./ASO	4	82	2a, 1ac	11	AHAA	Ordinary	16.11.2007	KT
U31	F	32	Office worker	Vantaa, Pakkala	Block	1999	Right-of-Occ./ASO	3	45	1a, 1c	3	AHAA	Ordinary	1.11.2007	KT
U32	F	44	Office manager	Helsinki, Tapaninkylä	Semi-det.	2004	Right-of-Occ./ASO	5	86.5	1a, 1c	3-5	AHAA	Active	28.11.2007	KT
U33	M	50	Sales director	Vantaa, Kuninkkala	Semi-det.	2000	Right-of-Occ./ASO	6	108	2a, 2c	5	AHAA	Individualist	17.12.2007	KT
U34	F	43	Not working	Vantaa, Metsola	Terraced	1995	Right-of-Occ./ASO	4	78	2a	6	AHAA	Active	17.10.2007	KT
U35	M	57	Machine fitter	Kirkkonummi, Laajakallio	Terraced	2001	Right-of-Occ./ASO	4	74	2a	6	AHAA	Active	12.12.2007	KT
U36	F	53	Medical doctor	Helsinki, Punavuori	Block	2002	Owner-occ.	4	75	1a, 1ac	5	24L/SRV	Eiranranta, P	16.10.2007	KT
U37	F	57	Interior designer, journalist	Helsinki, Hermesaari	Block	1974	Rental	3	55	1a (1a)	2	24L/SRV	Eiranranta, P	19.10.2007	KT
U38	M	54	Entrepreneur	Espoo, Olari [11]	Block	Unk.	Owner-occ.	5	110.5	2a	10	24L/SRV	Eiranranta, P	28.11.2007	RN
U39	M	49	Accountant	Helsinki, Kaivopuisto	Block	1995	Rental	5	117	2a, 1c	12	24L/SRV	Eiranranta, P	21.11.2007	RN
U40	M	46	Architect	Helsinki, Munkkisaari	Block	1911	Owner-occ.	5	127	2a, 1c	7	24L/SRV	Eiranranta, P	15.11.2007	RN
U41	F	61	Employed in family business	Helsinki, Eiranranta [12]	Block	2008	Owner-occ.	5	230	2a	0	24L/SRV	Eiranranta, P	2.10.2007	RN
U42	F	44	Director	Helsinki, Eira	Block	1914	Owner-occ.	5	105	1a, 1c, 1ac	2	24L/SRV	Eiranranta, S	23.10.2007	KT
U43	F	56	M.Sc. (Econ.)	Lappeenranta	Detached	1997	Owner-occ.	9	400	2a	10	24L/SRV	Eiranranta, S	6.11.2007	RN
U44	M	44	Medical doctor	Helsinki, Punavuori	Block	2000	Owner-occ.	2	38	2a	0.5	24L/SRV	Eiranranta, P	8.11.2007	KT

[1.] Building type: block of flats, terraced house, semi-detached, or detached house. [6.] Number of persons in the household, a adult, c child, ac adult child. Brackets indicate part-time residency.

[2.] Year of completion of the dwelling. [7.] Duration of residence in the current dwelling in years, m months.

[3.] Tenure status: owner-occupied, rental, right-of-occupancy, or part-ownership. vvo: owned by vvo rental housing corporation, ASO: owned by Asokodit right-of-occupancy housing provider. [8.] The project in which the interview was conducted, see Appendix 1. [11.] Last primary residence. The person was staying in his summer house.

[4.] Number of rooms in the dwelling including kitchen, excluding bathroom and other service spaces. [9.] Target group or segment that the person represents. Epithets in italics refer to lifestyle segments identified in the AHAA project. Persons marked with P intended to use the Eiranranta flat as primary residence, S as secondary. [12.] (U41) Concerns the flat in Eiranranta. The person was living in a temporary residence nearby.

[5.] Living area in square metres.



APPENDIX 2.

List of participants to the user study

ID	SEX	AGE	OCCUPATION	TOWN AND AREA	HOUSE [1]	YEAR [2]	TENURE STATUS [3]	ROOMS [4]	M <sup>2</sup> [5]	HOUSEH. [6]	STAY [7]	PROTECT [8]	SEGMENT [9]	INTERVIEW [10]
U1	F	46	Advisor	Helsinki, Koskela	Block	1972	Owner-occ.	3	64	1a	7	EA	Disabled	17.8.2006 AP, SI
U2	F	44	IT consultant	Vantaa, Simonsilta	Terraced	1999	Owner-occ.	4	83	1a	7	EA	Disabled	22.8.2006 AP, SI
U3	F	29	Export assistant	Espoo, Perkkaa	Block	1975	Owner-occ.	4	62.5	2a	4.5	EA	Disabled	29.8.2006 AP, SI
U4	M	35	Systems manager	Helsinki, Kumpula	Block	2005	Owner-occ.	4	71	2a	0.5	EA	Disabled	11.9.2006 AP, SI
U5	F	46	Researcher	Espoo, Mankkaa	Terraced	1984	Rental	4	83	2a, 3c	8	EA	Disabled	26.9.2006 AP, SI
U6	F	46	Sewer, unempl.	Porvoo, Gammelbacka	Block	1971	Rental/VVO	3	60	1a, 1c	2	24L/VVO	Immigrant	12.9.2007 KT
U7	F	53	Process worker	Espoo, Suvela	Block	1975	Rental/VVO	4	76	2a, 2ac, 1c	8	24L/VVO	Immigrant	24.9.2007 KT
U8	M	34	Cook, bartender	Vantaa, Malmiinityt	Block	1970	Rental/VVO	4	70	2a, 1c	1	24L/VVO	Immigrant	6.9.2007 KT
U9	M	26	Interior architect	Helsinki, Kannelmäki	Block	1978	Rental/VVO	3	60	2a, 1c	2 m	24L/VVO	Immigrant	17.9.2007 KT
U10	M	40	Stock worker	Järvenpää, Jamppa	Block	1977	Rental/VVO	3	62	1a (2c)	1	24L/VVO	Immigrant	11.9.2007 KT
U11	M	28	Stock worker	Espoo, Suvela	Block	1977	Rental/VVO	3	61	3a, 1c	0.5	24L/VVO	Immigrant	1.8.2007 KT
U12	F	31	Self-employed	Turku, Maiakkaranta	Block	1996	Rental/VVO	3	53	1a, 1c	1.5	24L/VVO	Untypical job	16.8.2007 KT
U13	F	28	Youth leader	Helsinki, Malmi	Block	1987	Rental/VVO	3	54	1a	2.5	24L/VVO	Untypical job	20.8.2007 KT
U14	F	27	Stock worker	Vantaa, Tikkurila	Block	1975	Rental/VVO	4	74	2a, 1c	2	24L/VVO	Untypical job	9.8.2007 KT
U15	F	55	Nurse, self-employed	Jyväskylä, Ainolanranta	Block	1998	Part-own/VVO	4	64.5	2a	4	24L/VVO	Untypical job	7.9.2007 KT
U16	F	24	MA student	Helsinki, Pihlajamäki	Block	1963	Rental/VVO	4	70	2a	1.5	24L/VVO	Untypical job	5.10.2007 KT
U17	M	41	Electrician, foreman	Espoo, Suvela	Block	1975	Rental/VVO	5	79	1a, 3c	2.5	24L/VVO	Single parent	12.8.2007 KT
U18	M	39	Purchaser	Järvenpää, Pajala	Block	1975	Rental/VVO	4	76	1a, 3c	3	24L/VVO	Single parent	23.5.2007 KT
U19	F	28	Self-employed	Järvenpää, Jamppa	Block	1977	Rental/VVO	4	74.5	1a, 1c	2	24L/VVO	Single parent	30.5.2007 KT
U20	F	37	Radiographer	Espoo, Suvela	Block	1976	Rental/VVO	4	74	1a, 1c	1.5	24L/VVO	Single parent	21.5.2007 KT
U21	F	41	Ward domestic	Kirkkonummi, Gesterby	Block	1969	Rental/VVO	3	55	1a, 1c	1.5	24L/VVO	Single parent	22.5.2007 KT
U22	F	26	Waitress	Vantaa, Jokiniemi	Block	1979	Rental/VVO	4	77	1a, 2c	2 m	24L/VVO	Single parent	10.8.2007 KT
U23	F	46	Interpreter, translator	Helsinki, Etu-Töölö	Block	1926	Rental	3	56	2a	3.5	AHAA	Individualist	19.11.2007 KT

# Contents of the user study

The probes study was planned by the author and Susanne Jacobson in 2006 and applied during 2006–2007 in three consecutive research projects with minor modifications (see Appendix 1). Five separate user studies were realised. The description below is a condensed translation from the original probes study material in Finnish. Instructions to respondents and other parts of minor significance to the dissertation have been omitted.

## PART 1 BACKGROUND QUESTIONNAIRE

Name, contact information, age, occupation, and employment status.

### CURRENT DWELLING

Number of persons living in the household (one adult, two adults, one adult and *n* children, two adults and *n* children), house type (block of flats, small block of flats, semi-detached house, detached house, other), living area of the dwelling in square metres, amount of rooms excluding kitchen (one, two, three, four or more), and duration of residence in the current dwelling in years.

### SPECIAL NEEDS

Open questions that were altered according to the target group and specific research questions in each study.

EA project, persons with disabilities

(interviews U1–U5):

*Please describe shortly the nature of your physical disability and how it affects your dwelling and everyday living. Have any modifications been done to your dwelling because of your special needs (such as removal of doorsteps or lowering of kitchen worktops)? (if yes, what modifications?) Do you use an assistive device (such as a wheelchair or rollator)? (If yes, which device?)*

AHAA project, residents of right-of-occupancy dwellings (interviews U23–U35):

*What are the good sides in your current dwelling? What would you like to change in your current dwelling? What kind of services would you and your family use if they would be available at a moderate price?*

24L project (VVO), immigrants

(interviews U6–U11):

*What in your opinion are the good and bad sides in Finnish housing and dwelling? What kind of ideas do you have for the development of better dwelling?*

24L project (VVO),

people having an “untypical” job

(interviews U12–U16):

*What kind of challenges does job precarity create to you concerning dwelling and everyday living? What kind of solutions have you found to these challenges?*

24L project (VVO), single parents

(interviews U17–U22):

*What kind of challenges does single parenthood create to you and your family concerning dwelling and everyday living? What kind of solutions have you found to these challenges?*

24L project (SRV),

future residents of Eiranranta

(interviews U36–U44):

*No open questions were included in the questionnaire. In the interviews, the persons were asked: How do you see that living in the 2000s is developing? What is luxury to you? What is the recipe of good living?*

### HOUSING CAREER

*Where, in what kind of dwellings and with whom have you lived during your adult life? Please describe your housing career until this day from the point onwards when you moved out on your own. You may describe freely in your own words.*

Previous dwellings were listed in chronological order in a table comprising four columns: years of residency, name of locality and neighbourhood, size of the dwelling (in rooms) and house type, and indication of the person(s) with whom the dwelling was shared.

## PART 2 CARD ASSIGNMENT

The participants were asked to answer qualitative questions about their living by writing on postcard-like cards. They were given 10 cards with following inscriptions and empty space in the other side:

- |  |                                  |
|--|----------------------------------|
| (1) Why did I move into this dwelling?               | (5) A memory related to my home. |
| (2) Does my dwelling meet my requirements?           | (6) My dream living.             |
| (3) How would I present my home to visitors?         | (7) Highlight of the week.       |
| (4) What should my living environment know about me? | (8) I am fed up with...          |
|  | (9) Boring!                      |
|  | (10) Feeling well.               |

## PART 3 CLOCK ASSIGNMENT

Describe the course of one typical day in your life using the clock dial. Place situations and events of one day along a timeline in the dial. Describe also the positive and negative experiences and feelings related to the situations. You may use the attached stickers.

The participants were provided a schematic image of a round clock dial covering 24 hours, and stickers with pictures of cartoon faces expressing different moods (happiness, anger, tiredness, thoughtfulness, etc.).

## PART 4 CAMERA ASSIGNMENT

*Take photographs of your everyday living as well as the good aspects and downsides of your living environment. Please interpret the topics freely and photograph things that come to your mind and that you yourself consider important.*

The participants were given a disposable camera and a list of 24 topics:

- |   |  |
|---|--|
| (1) This makes my home looks like mine.     | (13) Lot of work...                      |
| (2) This I wouldn't give away at any price. | (14) My hobby.                           |
| (3) This I would like to get rid of.        | (15) First thing in the morning.         |
| (4) This is awkward.                        | (16) End of the day.                     |
| (5) This goes well.                         | (17) This is how I take care of myself.  |
| (6) Something that I need help with         | (18) Most comfortable place at home.     |
| (7) Our house.                              | (19) A good assistive device.            |
| (8) An important person.                    | (20) A bad solution in my dwelling.      |
| (9) Together.                               | (21) This creates a feeling of security. |
| (10) Private.                               | (22) Technology helps...                 |
| (11) Best in the area.                      | (23) A service that I like to use.       |
| (12) Worst in the area.                     | (24) On the move.                        |



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THIS DISSERTATION INVESTIGATES DWELLING AS A SYSTEMIC PRODUCT FROM THE PERSPECTIVES OF HOUSING PRODUCTION, USERS AND DESIGN.

BRIDGING DESIGN RESEARCH WITH HOUSING STUDIES, THE WORK DRAWS PARALLELS BETWEEN THE URBAN DWELLING AND OTHER INDUSTRIAL PRODUCTS AND CONTEMPLATES THE ROLE OF CONCEPTUAL AND STRATEGIC DESIGN IN THE QUALITATIVE DIVERSIFICATION OF HOUSING.

THE STUDY COMPRISES TWO EMPIRICAL CASES FROM FINLAND. THE FIRST CASE EXPLORES THE COMMODIFICATION OF DWELLING AS EVIDENCED BY DUPLICABLE HOUSING CONCEPTS. THE SECOND CASE LOOKS AT THE EVERYDAY USER EXPERIENCE OF DWELLING.

THE STUDY SHOWS THAT DWELLING AS A PRODUCT EXTENDS BEYOND HOUSING ARCHITECTURE, CONSTITUTING A BUNDLE OF DESIGNABLE ELEMENTS ACROSS THE BUILT ENVIRONMENT, INCLUDING TECHNOLOGY, SERVICES, THE COMMUNITY AND OWNERSHIP. THE ELEMENTS SERVE THE VALUE-SEEKING STRATEGIES OF PRODUCERS AND USERS.

THE BOOK PROVIDES NOVEL THEORETICAL AND PRACTICAL INSIGHTS FOR HOUSING PROFESSIONALS AND RESEARCHERS ALIKE.



ISBN 978-952-60-5544-2  
ISBN 978-952-60-5545-9 (pdf)  
ISSN-L 1799-4934  
ISSN 1799-4934  
ISSN 1799-4942 (pdf)

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