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**PhD Review: Potential for Ageing at Home in the Finnish Apartment building stock. A spatial perspective on renovation edited by Tapio Kaasalainen (PhD, Tampere University)**

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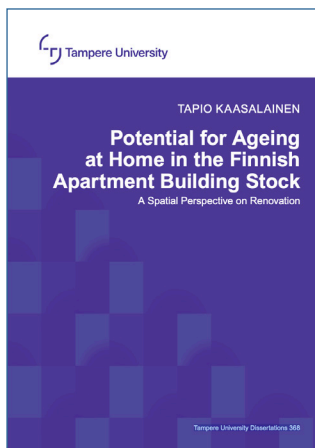


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## PHD REVIEW: POTENTIAL FOR AGEING AT HOME IN THE FINNISH APARTMENT BUILDING STOCK. A SPATIAL PERSPECTIVE ON RENOVATION EDITED BY TAPIO KAASALAINEN (PHD, TAMPERE UNIVERSITY)

REVIEWER: IRA VERMA

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### Introduction

Architect Tapio Kaasalainen successfully presented his doctoral dissertation in February 2021 at the Faculty of the Built Environment at Tampere University, Finland. His doctoral dissertation *Potential for ageing at home in the Finnish apartment building stock. A spatial perspective on renovation* is an article-based dissertation including four peer-reviewed journal articles and summarizing chapters. The dissertation uses a housing stock approach to demographic change, which is a very topical and global challenge. The author introduces the reader to the existing housing supply and the new demands that the ageing population is raising for housing development. The need for suitable apartments for the older population is increasing fast, and new apartment buildings are not able to satisfy the demand. In Finland, the apartment stock is renewing slowly – only by approximately 1.5–2.0 percent yearly. The slow pace of new housing developments is not able to respond to the rapidly growing demand. One-third of the need for apartments should be covered with adaptation and renovation of the existing building stock. The overall objective of Kaasalainen's study was to evaluate the structural and spatial adaptability of existing apartment blocks, especially those from the 1970s, for the needs of the growing numbers of an older population.

## Objectives

Through this study, Kaasalainen was aiming at developing a model for mass tailored renovations and accessibility adaptations of apartments of the 1970s. The research questions of the summarizing section are: how suitable or adaptable are the existing apartments for the ageing population, and how adaptable are the existing apartment buildings floors for assisted living group homes? The study focuses on the typology and classification of apartment plans. The strength of the dissertation lies in the scale of the study sample. The author has used material from archives of the Housing Finance and Development Center of Finland (ARA), which grants subsidies for the development and construction of affordable housing and housing for special-needs groups. The government-subsidised apartment construction had its peak in the 1970s. Kaasalainen argues that the building norms and guidance provided by ARA largely influenced housing construction in general at the time. This adds to the generalizability of his study's results. At the same time, innovations in the building industry led to prefabricated construction. To complement the material from archives, Kaasalainen has studied the building methods and technical adaptability of the prefabricated panels and cross-wall systems.

## The sample

The study includes apartment blocks (N=320) from 1968 to 1985. This period represents the peak of urbanisation and mass housing production with new prefabricated construction in Finland. A large proportion of existing apartment housing was realised during this period. Furthermore, to evaluate the adaptability of the floor plans of these apartment buildings for an older population, Kaasalainen makes a comparative analysis with 30 randomly selected assisted living facilities, built or renovated between the years 2000 and 2015. The dissertation includes studies on floor-level space connectivity, spatial properties and dimensions as well as the total area available. The evaluation of the floor plans results in a typological classification of apartments. The same kind of spatial analysis is carried out using assisted living facilities.

## Methods

Kaasalainen approaches the building stock through spatial analyses. He has studied the plans of individual apartments, layouts of building floor, and the structure of the buildings with several methods. He uses space syntax in referring to dimensions, functions, position and connectivity graphs of spaces in residential buildings. In his dissertation, Kaasalainen has described the analysis process, which enabled him to develop a typological classification of the apartments. The methodologies used in the study aim at developing a model for mass tailored accessibility adaptations. The author has produced in-depth knowledge with



relevant research methods in the field. He has applied network theory and building research methods to study large data sets. The space and the potential for modification are studied through defining the concepts of functional space, physical space and potential place. He has carried out detailed analyses of each building plan and spatial dimensions. He has conducted systematic analyses of the quantitative data gathered. Kaasalainen also found that the prefabricated building system and its dimensions were adaptable for renovations.

## Results

Kaasalainen has studied the spatial potential of the apartment buildings and their use as group homes for older people. He has identified typologies that repeat in the apartment layouts, and he has created a “theoretical flat”. The typological and dimensional evaluation carried out in the study showed that the habitable rooms, living room and bedroom in these apartments were often bigger than in current housing developments. This is a positive feature, for example for people using walking aids. Moreover, the study revealed that the dimensional and structural characteristics of these apartment buildings do not hinder other modifications that enhance ageing at home. Kaasalainen observed for example that bathrooms, which often were too small by current standards, were only rarely surrounded by bearing walls, and therefore can be modified. He found that these apartments can be relatively easily adapted for the needs of an older population. The author summarizes his results into a mass tailored accessibility adaptation model. It shows the potential of these buildings for older people living independently at home or leading a more communal life in an apartment building.

To complement the study, Kaasalainen evaluated the potential of these same apartment buildings for group homes for older people. He made a comparative study of the sample of 30 assistive housing facilities, built or renovated between the years 2000 and 2015. He analysed the typology, spatial dimensions, total floor area and connectivity of the spaces of each facility at floor level. He recognised some typological characteristics of the existing assisted facilities, for example, a linear layout with a central corridor. Thus, this sample is not an ideal typological reference. The author concluded that the structure of the apartment buildings of the 1970s, or parts of them, can be converted to assisted living facilities, and most of the buildings could accommodate functions required for them. However, he recognises the limitations of his study, and does not discuss the quality of the spaces or the suitability of the typology for vulnerable people with declining memory. He found challenges in creating common spaces for large assisted facilities with many residents. Social activities and a feeling of security are important drivers for why older people choose to move to assisted facilities. He points out that the modifications proposed may be a possible solution, especially in

shrinking areas with ageing population, where new constructions may not be cost-effective. Moreover, he concludes that the proposed model is adaptable at building or single-floor scale.

This dissertation brings new knowledge for mass tailored building adaptations for ageing population. It shows that refurbishment of old building stock may be a viable alternative to demolition. Moreover, the renovation may be a more economically and ecologically sustainable solution than the demolition of old apartment buildings and the construction of new apartment buildings. He found that the structure did not hinder modifications; however, the current recommendations for assistive housing were not always achieved. Furthermore, he did not critically evaluate the quality of spaces, for example building orientation, natural light and views after adaptations.

This study focusses on the structural adaptability, space dimensions, as well as horizontal connections between spaces in apartment buildings. In Kaasalainen's dissertation, the ground floor plans, entrance and vertical connections have been left out. The author recognises the importance of the location, and connection between outdoor and indoor environments for assisted living. The overall evaluation of access to outdoor spaces and lifts would enhance inclusiveness in the community. Kaasalainen has not included these themes in his dissertation, but proposes a holistic assessment of buildings for future studies.

The dissertation has merits, and it brings out an important and topical issue on ageing populations. The study has practical and societal relevance due to the large number of apartments produced and the similarity of apartment layouts of the period. The model may lead to a reduction of renovation costs, and is applicable especially in areas that are ageing and shrinking. It proposes a mass tailored accessibility adaptation model for existing apartment buildings. The results show the potential of these buildings for older people living independently at home or leading a more communal life. The proposed model is adaptable at building scale or single-floor scale. The economic feasibility of an assisted living facility, however, is also related to the total number of apartments. The study supports technical feasibility of the group homes, but further studies would require evaluation of the quality of spaces generated. The dissertation leaves the reader to have a critical view of the quality of spaces. Moreover, Kaasalainen recognises the importance of natural light, views and materials, which need to be studied separately in each case. This study has merits and societal impact, it contributes new knowledge within the research field and in the housing industry. The methodology proposed is adaptable to other contexts.