

## foreword

My interest in the potential of and the possibilities within the renewal of house design springs from questions that I have faced in design practice, and from my experience as a design tutor at Helsinki University of Technology. My view on the wide spectrum within housing design has also been further broadened by my studies abroad. I have been fortunate to become familiar with two innovative cultures that both produce housing design of high quality; first at the beginning of my studies at the University of Technology in Graz in Austria, and later, as part of my graduate studies, at the Berlage Institute in Amsterdam in Holland.

Even though I see myself primarily as a design architect, my interest in research stems from a desire to understand the process that has made current housing production system in Finland static and unvaried and to investigate how the present situation could be changed and housing production developed. I wanted to combine practical design work and analytical and theoretical investigation; and subsequently a thesis format that combines design and research became an almost self-evident approach for my thesis and ultimately also a challenge. Conceptually, research of this nature is relatively new in architecture and it is still finding its precise format. My research method derives from a personal and continuous dialogue between practical design work and theoretical and historical research in housing design. On one hand, my design work has focused on seeking answers from the analytical study of housing design, and on the other, on identifying some relevant issues related to housing design via the actual design process itself. In other words, my method consisted of an intuitive "ball-game" between theory and practice. I have often had to redirect and focus my views as the "ball" has hurtled from one side to the other. In a way this kind of research method resembles the questioning method found in ambitious design work. At its best, creative artistic work also questions the prevailing architectural preconceptions and viewpoints, creating a new form and a direction for architecture that responds to changes in society. However, architecture is never created from nothing; all architecture is resultant of its own history and is connected to the surrounding society, its power structures and socio-economic relationships. The basis

for the understanding of design solutions in housing construction, and their subsequent impact on a wider social context, lies in traditional research and architectural criticism, to which also this research owes a debt. I would presume that, as it develops, this new type of research of combined theory and practice, will contribute to the identification and recognition of those viewpoints that take into consideration the design process in architecture.

This research consists of six chapters. Chapters I-IV consist of largely historical and analytical examination. In Chapter V I presents some new house types that I have designed. They are based on my conclusions, described in Chapter IV, on the development of house design. My house types aren't intended to be copied as such, nor are they meant to be models, but they highlight the aspects that I believe are relevant for the sustainable development of housing stock. The ideas may be interpreted in a multitude of ways and they help to create further house types. The house types are not bound by any stylistic restrictions either. Chapter III focuses on the concept of type. I have considered its interpretation relevant for the identification of design objectives. One of my working hypotheses has been the notion of the interpretation of the concept of type as a dictate on how dwelling and housing production are perceived in society. Chapters I-II illustrate the historical basis on how the paradigm for our current housing design has been created and what problems it now faces as the society changes. Even though this research focuses mainly on Finnish housing production I believe that the problems are partly universal. The research highlights the architecture of Dutch housing, which is partly because of my post-graduate studies at the Berlage Institute where I became familiar with Dutch housing design. In many ways, Holland is an exemplary country in its sustained development in housing design, which has led to a modern architecture in housing which is continuously renewing itself and which is capable of responding to the changing needs of the individual. Further more, characteristically in Holland, planning and housing design are successfully integrated; and the often ambitious objectives set out at planning stage are usually met in the realisation of the actual built environment. This is partly due to the understanding of the tight relationship between house types and planning that does not diminish at any design stage from planning to the construction itself. The planning process in Holland has a long tradition in the development of house types. The basis of this lies

in the prevalent, generally accepted experimental architectural culture, in which the variety of possibilities also reduces the scale of potential mistakes. The development and sustenance of long-term housing culture are not, in Holland or anywhere else, a matter of course, but demand a conscious setting of objectives and subsequent supportive political decision making. In addition, it also calls for joint collaboration between and social responsibility of all those involved in housing production. Housing production is often seen merely as a business activity, within which single operators usually find it difficult to perceive their individual responsibility and their role in the development of the built environment. Chapter VI brings together the arguments about the factors in housing production that I consider relevant for the development for the renewal of housing production.

As there is not yet any prevailing tradition for this type of joint research and design project, I would like to particularly thank all those people who either tutored me or commented on my work for their support and critical viewpoints. I would like to thank Professor Tuomo Siitonen, who, in addition to tutoring my work, also gave me an opportunity to adopt and deepen my research in my teaching work as a studio leader for housing design at Helsinki University of Technology. Other people who commented on my work or parts of it include: Vilhelm He-lander, professor, Aino Niskanen, acting professor, Kimmo Lapintie, professor, Trevor Harris, professor, Antti Velthein, M.A., Meri Mäkipentti, architect, Anni Vartola, architect and Antti Pirhonen, architect. They have all contributed to the identification of my research problem and have made important observations about the work. My warmest thanks go to the artist Oliver Whitehead for his help and participation in the graphic appearance of this work and for his empathy and support during the working process. In addition, I also wish to thank the staff at the Library of the Architecture Department at Helsinki University of Technology and all those who have helped me in gathering the research material. I also thank the following for their trust and financial support enabling me to carry out this research: Helsinki University of Technology, Finnish Cultural Foundation, Alfred Kordelin Foundation and Arts Council of Finland.

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## introduction

*“But how else can mortals answer this summons than by trying on their part, on their own, to bring dwelling to the fullness of its essence? This they can accomplish when they built out of dwelling, and think for the sake of dwelling.”*

*Martin Heidegger*

The built reality that we live in reflects largely to how dwelling is understood in society. The prevailing viewpoints and attitudes in society direct and control housing construction. Further more, the concept of the human being, the individual as part of society, is also an underlying factor. In Finland, through the process of housing production having become industrialised, it has also become a servant to national economy and to the so-called “common good” for the advancement of trade and industry. The needs of the individual have often been bypassed in the presumption that the “common good” will also serve the individual. He, the dweller in a house, has not always benefited from this development. The prevailing approach has not provided dwellings at reasonable cost that also offer the necessary spaciousness, or real alternatives for housing which would derive from the individual needs of people. Because of this limited viewpoint, the housing production structure, created over decades in Finland, now produces very uniform housing serving only a limited building sector. During this process in which the housing stock has become uniform, housing production itself has also become monopolised: people have had to buy what is on offer due to a lack of any real alternatives. On one hand, housing construction has been controlled by the production-orientated housing market, in which housing design has been determined by the production process; on the other, it has been moulded by the fixated authoritarian culture of modernism and the trend for standardisation, which have both become alienated from everyday life. According to research results, there is a significant conflict between the individual needs of people and what is on offer in the housing market.<sup>1</sup>

These research results do not, however, indicate clearly how people would like to develop their housing. For most people it is difficult to imagine the possibilities in

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<sup>1</sup> Strandell, 2004,131.

housing design –how one’s wishes could be met- when there are no real alternatives. Alvar Aalto once said that all building should be “experimental”. According to him architecture is a constant questioning process within which further development of ideas becomes possible. The current industrial construction processes are directly linked with certain building techniques and housing types. Anything that deviates from the familiar is considered expensive and as complicated “experimental” building. Therefore, the processes, not the needs of people or sustainability, dictate the subsequent housing design.

Housing design, which creates the bases for people’s homes, is a complex process. Understanding housing or dwelling either too simplistically or too theoretically can lead to unsustainable design. To understand dwelling as a multifaceted, polysemous and archetypal need, inherently associated with the human nature, will guide us towards design that will re-pond to the real needs of people. A technocratic approach that focuses on the production process has a tendency to exclude other, more undefined aspects in housing design because those values are more difficult to measure or to standardise. In his significant essay (Bauen Wohnen Denken)<sup>2</sup> the philosopher Martin Heidegger expands the concept of dwelling to include its full range of aspects and values and to eliminate the feeling of homelessness and alienation from one’s environment. Heidegger compares the concepts of building and dwelling and concludes that building does not necessarily lead into dwelling, but because we are dwellers, we will build. He distinguishes between the terms dwelling and housing, which consists mainly of accommodation of people. Dwelling is a term that focuses on humanity, stability and freedom and describes how a human being is connected to his environment, the stage

<sup>2</sup> Heidegger 1978.



1. New prefabricated houses in a suburb in Russia

on which we build. An area onto which something is built is not only a base, but, via building, the subsequent creation of spaces, it becomes a place where all the meanings inherent in dwelling become one. Its forms of existence are indistinguishable. From the point of view of research, I feel that the phenomenological approach represented by Heidegger is important for both the identification of all those factors that are associated with dwelling and, further more, for the realisation of sustainable design in housing.

The dreams and mental images associated with dwelling influence people’s desires and choices in housing. Because they have no real alternatives to choose from, the deep, archetypal needs and wishes of people are often more easily met in the prefabricated houses currently on offer. They imitate traditional housing styles and modes, even though they are often badly designed, contextually random and therefore also potentially un-sustainable. Bi-ased, technocratic and industrially produced housing is partly responsible for the fact that people have sought out the only other existing alternatives, found in the prefabricated kit-house market, which appeals to their emotional imagination. Development of this nature is clearly visible in countries which have lived through a totalitarian system and within which the housing production system was previously extremely unvaried and conformed, such as Russia where the clumsy monotonous Soviet style has now been replaced by a prefabricated housing production which attempts to reflect the traditional dacha-culture with archetypal “my home is my castle”- attitude. Over there the means of one form of mass culture have simply been replaced by those of another, in which the visual image of the living environment appears varied, yet is random and artificial. In countries where it has been possible to create a constantly renewing, varied and ambitious housing production culture, the prefabricated house industry has also been marginal and the resultant living environment of higher quality. Holland is a good example of this: the wide range of housing typologies in Holland allows the individual needs of people to be met.

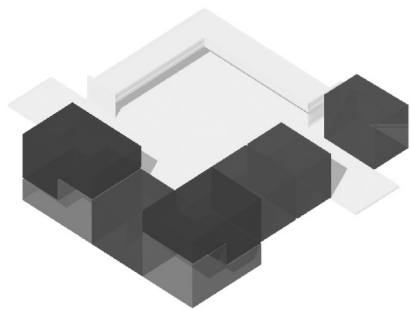
Heidegger sees the reform of dwelling as an inseparable part of the concept of dwelling. He does not disparage the urgency and importance of responding to the ever increasing lack of housing, but instead emphasises the method of its realisation. In the end, the question is about responding to an eternal and inherent need within the human existence. For Heidegger it is enough just to regard building and dwelling as worthy of questioning and consideration. Thinking is also part of dwelling.

## THE AIMS OF THIS RESEARCH

In this research I attempt to find answers to the questions on how housing production could potentially be developed for it to serve the real needs of people and to create a sustainable, good quality environment, which in turn could also adapt itself to the needs of future generations. In addition, this research aims to participate in the discourse on house design and to offer both a critical standpoint and some new design propositions in response to the growing needs in housing and environmental design.

No other art form is as entwined with society and time as architecture. Time and sustenance are an inherent part of architecture, and architecture has to carry on existing far beyond its creation. The past and the future co-exist in the present building. As a result, the theme of sustainable development plays a significant role in this research. Our lifestyle that focuses on consumption and within which the dwelling is seen as a continuously changing commodity, provides an unsustainable approach for the future generations and for their living conditions. A building stock cannot be created for the present generation's consumption standards or preferences only. Therefore, it is impossible to think that a market situation would be allowed to dictate the development of a housing stock without it being controlled by a considered, objective-orientated and far-sighted housing policy and subsequent development work. A housing stock must be able to serve several generations. Instead of directing possible future reinvestment on the housing stock towards the demolition and rebuilding of the same stock, funding could be directed towards the development of quality in housing and in living standards.

2,3. An example of a close connection between a house type and a site. A tight house in Kurkimoio in Vuosaari, Helsinki, within which individual dwellings are interlaced allowing two-storey dwellings even though the overall building volume is three-storey. Below a diagram of the location of dwellings in the building on the right. The tone in the diagram refers to an individual dwelling. In the house type the entrance to all dwellings is always located on the ground level. The design also utilises the contours of the site by positioning of all external terraces and gardens close to ground level and avoiding views from the upper terraces to the lower ones. Talli Ltd, 2005.



This research broadens the concept of sustainable development in housing to include cultural sustainability. Architecture cannot sustain itself purely on its functional and structural aspects. Its abilities to carry cultural memory and to act as a living stage for social interaction are also factors that sustain architecture. Hence, it becomes relevant to acknowledge the quality and aesthetic aspects of architecture.

## THE DEFINITION OF THE RESEARCH TOPIC

This Licentiate Thesis has been confined to the development of compactly interlinked private houses. The house has attributes that have not yet been fully utilised within the existing design and production paradigm. The house and its spatial design are always directly linked to its immediate surroundings and to its building plot. The house offers an ideal opportunity for the development of the connection between the external and the internal spaces.

According to research, at some point in an individual's life, living in a house becomes the most desirable form of dwelling.<sup>3</sup> However, the present production system of individual houses does not always respond to the changing and varied needs of people. House production is mainly tailored to a predetermined and presumed occupant profile, which usually excludes many other occupant groups, such as single people, for example. In order to create sustainable social structure for a dispersed area, the relevance of developing individual houses is often also questionable.

I approach the concept of the house, which could be interpreted in a number of ways, via the objectives currently set out for a house. I have defined the house by its basic characteristics, such as an entrance directly from ground level and its own external space. I did not want to define it more tightly as that could have led to the exclusion from the investigation of a number of different development possibilities. The loose interpretation of the house in this research allows for development of mixed house types that combine characteristics from blocks of flats with those of individual detached houses. In addition, the concept of compactness depends on the method of approach. Often its definition has consisted of the efficiency of a plot, a city quarter or of a larger area. Out of these, the efficiency of an individual building plot best describes the compact building solutions and therefore it has also been used in this research. My study focuses mainly on the sort of linked house building that is usually realised by professional developers. The linked structure allows for efficient use of building plots without compromising the sizes of individual dwellings nor on aspects of habitability. One  
3 Strandell, 2004, 125-126.



4. An advertisement of Haka Construction Company on the increase of productivity, published in the BES- Research.

of the house types (C) also touches on self-build house production by attempting to demonstrate how the organisation of a plot is directly linked with the provision of variety in the environment on one hand, and with the internal organisation of the dwelling itself, on the other. Further more, this house type illustrates a compact single-storey design solution, which is usually the easiest and cheapest self-build alternative.

#### THE OBJECTIVES FOR HOUSING DESIGN

More and more developers are becoming interested in building individual houses. One of the reasons for the increasing interest has been the growing desire and possibility for people to live in houses, which has also been reflected in official government housing policy since the turn of the millennium in Finland. This policy set a target for the development of compact and low house building. In the construction material industry, timber construction industry, in particular, has seized the opportunity and attempted to increase and extend the use of wood in house construction. So far, though, the conceptual development of house dwelling has not been considered to that extent.

In towns and in larger municipalities the importance of building good quality individual houses has been understood to be a significant factor in the competition for inhabitants and businesses. The quality of the living environment and the readiness to respond to the needs of inhabitants are becoming important determinants in the discussion on the development of housing. The ongoing change in housing stock can therefore be seen as an opportunity to develop housing production to serve not only the changing and varied needs of people, but also the sustainability of the community structure. The debate on the quality and content of dwelling that is gradually arising is therefore paramount and it should be used for further, deeper analysis on how we wish to dwell and how we prepare for the future of our housing stock.

There is also a danger, in the building work of a transition period, of uncontrolled construction and of indiscriminate realisation of ideas. The volume of house building has already increased and will probably continue to do so. The models of developer-led district building, familiar from the suburban construction period of the 60's and 70's, are being adapted for the outskirts of larger towns and cities. In areas that consist of incoherent urban plans, the realisations are often developer-led, resulting in badly integrated or disconnected small entities, executed in a random, quilt like fashion. The resultant surroundings are usually inconsistent in their overall planning, environment, neighbourhood and individual external

spaces, gardens etc.

In Finland, during the great transition periods in housing production and construction, the profit and quantitative targets became the expected focal objectives. In the past decades, due to the lack of clear, long-term development in housing policy, housing construction has also been a significant contributory in economic politics.<sup>4</sup> According to Anneli Juntto, who, in her doctorate thesis, highlights the history of Finnish housing policies from the middle of the 19th century until the 1980's Finnish housing politics have traditionally been inconsistent and based on interim decisions.<sup>5</sup> The crises have created temporary solutions, within which long-term, sustained housing policies have remained unrealised. The conceptual objectives in housing have always been harnessed to serve and support the current population and economic policies. This is partly the reason, in addition to the lack of long-term policy, why space per capita in housing is less in Finland than anywhere else in Scandinavia or in the Western world.<sup>6</sup> Short term solutions have cumulated over time and turned into underdevelopment. Juntto also regards the postponement of or indecisiveness in decision making as decisions in housing policy per se, which in turn have had long-term effects in both housing policy and in the development of housing in general.

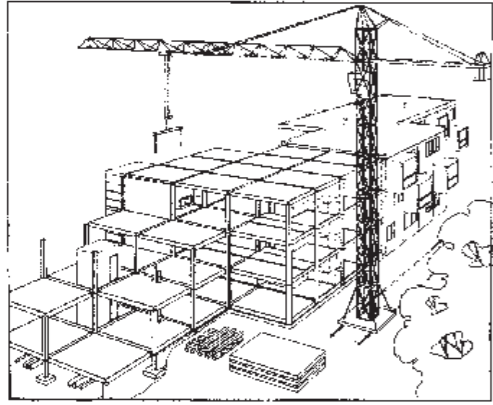
#### THE DEVELOPMENT TARGETS AND THE PARADIGM OF EXISTING HOUSING PRODUCTION

To satisfy the need for dwelling, the most fundamental physical and psychological human need, plays a particularly important part both in sustainable social and community structure, and in the life of every individual. This is the reason why it is necessary to clearly define its development targets. In Finland – the promised land of information technology- the main development target in housing production is weighted by technocratic and technological issues. The various development programs that exist are usually designed around some product that has been devised to improve either an individual structural part or a single component of a building. The funding of these programs is also usually directly linked with the development of that particular product. The quality of buildings and the environment is harder to measure, or to brand, and consequently it is bypassed in these development programs. In order to avoid socially unsustainable development both in the communities and in housing, the need for the progress in technology should constitute only a part of the overall requirement for develop-

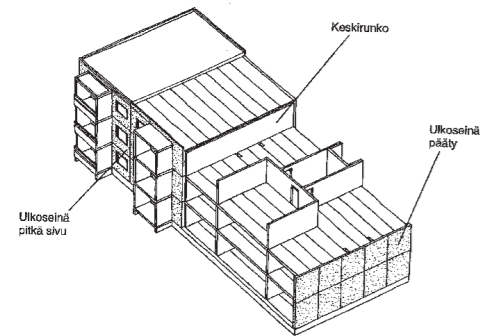
4 Juntto 1990.

5 Asuntokysymys Suomessa. "The Housing Question in Finland", Publication No.50 of The Socio-Political Society. Helsinki 1990.

6 Housing statistics in the European Union 2004. [www.boverket.se](http://www.boverket.se).



5. The Column-Slab construction system that was widely researched in the 1970's -and which could have allowed free design of both the plan and the elevation of buildings. The system represented the architects' ideal of the correct development of the prefabricated element-system. However, it was replaced by an inflexible prefabricated slab system (BES) where long narrow slabs were spanned from load-bearing walls.



6. The BES-Element Construction System which in practice became the standard element construction system in Finland. Due to the methods of load-bearing and reinforcement, the plans of individual dwellings cannot be made flexible nor adaptable. BES has partly been responsible for the uniform housing production in Finland.

ment in housing. To think that technology alone could resolve spatial or cultural problems is delusional and stems from the perception of dwelling that was created by functionalism and within which the dwelling was seen as an industrial product for the masses. Functionalism made standardisation part of housing production. Despite the original ideological aims for the promotion of good housing, functionalism simplified the approach to housing and subsequently significantly contributed to housing becoming inflexible and set in the process.

Proportionally Finland has one of the highest numbers of blocks of flats in Europe, and housing production in Finland consists mainly of prefabricated element construction. In her doctorate thesis Johanna Hankonen studied the strong transition period in Finland from the 1960's to 1970's during which the whole society went through a radical change in the building of the suburbs.<sup>7</sup> The industrial housing production, programmed in collaboration between the public and political sector and the private developers in 1960's, made Finnish housing production almost entirely industrial.<sup>8</sup> The change in the production structure in Finland was one of the most radical in the world. This led to housing being constructed largely in accordance with production terms – i.e. production aspects dictated housing design. From the point of view of good design, the situation should be the complete opposite – production should be the one to adapt to various alternatives in housing design. The present technological development enables many individual and specific design solutions to be created and industry is no longer dependent of large quota production. Production-led housing construction has left a mark in the attitudes and presumptions within housing production which make it very difficult for some to adopt new approaches to housing design.

In those Western-European countries, such as Austria, where there is still a tradition of in-situ construction and hence they have the necessary, specialised skills, they have managed to produce high quality and varied housing at a reasonable cost, even for the social housing market. The local building industry has also benefited from this development. Since the early 1900's in Graz, for example, the steel industry has collaborated with architects and subsequently it is responsive to their design requirements.<sup>9</sup> This has allowed for it to develop into an internationally significant supplier of high tech components. Therefore, it is entirely appropriate to question whether the components supplied by the Finnish element industry are too large, clumsy and too determinant in the spatial organisation of dwellings to be responsive enough to the ever more particular needs in housing design. Good house construction that derives from the needs of occupants, and

<sup>7</sup> Hankonen 1994.  
<sup>8</sup> Hankonen 1994.  
<sup>9</sup> Blundell Jones, 41.

the development of new house types, demand individual design solutions. Small building components and in-situ building enable designs which at present, within current element construction process, are not possible or alternatively would require expensive adaptations of the existing construction method.

The present construction system of using elements has been widely defended using such arguments as the Finnish climate etc. It allows buildings to be easily assembled and in-situ construction in difficult conditions to be minimised. However, this phase of element construction in the history of Finnish housing construction has been very short. Further more, the clumsy element construction, compared to other construction methods, has caused the highest number of problems and required the most amount of extra investment as the buildings have become older. The simplicity of the construction method has mainly benefited the building industry that has focused on the Finnish market and those contractors that have been able to provide a quick construction method demanding few specialised skills. However, the prices of individual dwellings have not fallen, even though the construction methods have been simplified. As element construction has become more dominant the general level of constructional skills has dropped in Finland. At present, in-situ construction has again become economically competitive and an efficient construction alternative, but it does require a high level of constructional skills.

The question is about the approach and about changing it. The designs for dwellings should be developed and appropriate construction methods should be determined for the new designs, instead of forcibly adapting housing to meet with the production system. This is relevant for the development of the entire community and its social structure. Developers and contractors have so far only offered seemingly different alternatives, but in actual fact they have not been able to make tangible, real changes in housing production. The alternatives offered to occupants have mainly focused on different interior decors, but the development of true spatial alternatives has been minimal. New house types have often become expensive as a result of being perceived as such within the production system, and ultimately they would also require for the system to change.

## THE SPATIAL AND TEMPORAL FLEXIBILITY OF A HOUSE – THE CONCEPT OF TYPO-LOGICAL FLEXIBILITY

The Dutch architect and architectural theoretician N.J. Habraken draws a comparison between a community structure and an organism that can adapt

itself to changes over time. According to Habraken, the environment, like an organism, has always been self-organising. As professionals we only interfere with the ceaselessly changing process of nature. Even though we may be able to affect the large scale changes in our surroundings, ultimately the formation of the built environment will follow its own inherent laws. Habraken considers it impossible for the living environment to be totally “invented” and superimposed on people. It can, however, be cultivated and developed.<sup>10</sup>

To achieve design that derives from temporal sustainability and the occupants’ needs, it is important to acknowledge the flexibility of a dwelling as an important factor for the development of housing design as a whole. The notion of flexibility of dwelling can be approached from a number of angles depending on the sort of flexibility that is required. It is therefore important to define the objectives for the flexibility of a dwelling. The technological approach to flexibility is via the internal alteration potential of a dwelling, in which technology and walls can be moved and modified in accordance with the occupants’ needs by using engineering techniques and adaptations. This presumes that the occupant is able to visualise the impact of the changes, which in turn may also require large scale alterations to the building. The realisation of the required technology may be expensive and it also dates quickly. However, each individual perceives his or her dwelling from a unique viewpoint. A dwelling should be appropriate for the occupant’s needs without alterations, or constant compromise and adaptation by the occupant himself.

Typological flexibility is a concept that I have adopted. In typological flexibility the spatial characteristics of a dwelling must allow dwelling that derives from the independent and changing needs of the occupant without the dwelling itself requiring major changes as the needs vary. As one’s living styles change the space one lives in cannot be predetermined for a singular function, as defined in the paradigm for functionalistic housing design. The sufficient sizes, and the sensible and carefully considered interconnection of the spaces and the relationship between the inside and the outside form the prerequisites for the flexible use of a dwelling. The standardisation of a dwelling, which was based on the concept of a minimal living space and further emphasised in Finland by the pricing premise of a home on € /m<sup>2</sup>, has uniformed dwellings and created small room spaces. Typological flexibility demands spacious rooms that can be divided into smaller spaces whenever necessary. In addition, the interconnection of room spaces that allows separate functionally independent spaces presumes a level of spaciousness. The current efficiency requirements, prevalent in the present day housing design, do

<sup>10</sup> Habraken 1998.

not easily allow this. Consequently there is a conflict between the paradigm of the housing production of today and the aims for sustainability. The price of a dwelling is one of the most decisive factors when choosing one’s home. In social housing, in particular, due to cost effectiveness, there are strict limitations to the sizes of spaces. This will inevitably lead into a development within which more and more rooms are squeezed into diminishing floor areas, which will again lead to the already mentioned uniform and over-efficient housing design. Corridor spaces and room sizes have been minimised in the name of efficiency. Housing design of this nature does not even respond to present day needs. In addition, Finnish housing production, in relation to the achieved quality, is also expensive. The situation can be eased by perceiving the dwelling as a growing and contracting entity, but this presumes a situation where one is able to time one’s investment in housing so that it coincides with the particular phases in one’s life and the resources that one has available. It is possible to let a space from a larger dwelling and create flexibility for the changes brought on by one’s life circumstances. If the dwelling was perceived as an entity consisting of different spatial units that can function independently and be combined or separated to form varying combinations, in accordance with the parameters of the chosen house type, flexibility for various life situations could be more easily achieved. The typological approach treats each spatial unit as an entity in itself and as part of a larger structural context. The units can work as independent spaces separated from the rest of the dwelling, as spaces to be let or sold off, or as annexed dwellings for an older child or possibly as workspaces, which in turn could enrich the community structure.

For the building stock to have temporal adaptability and flexibility, all its qualitative factors must form an inseparable entity, which will then create longevity in time. The concept of Type combines and creates a coherent whole of both the architecture and the functional characteristics of a building. The concept is like a continuously changing framework within which change is constantly present. This research brings to the fore the concepts of type and typology as significant starting points for the investigation of the temporal sustainability of the housing stock. Typology examines the relationship of the types and the reality that the types convey. The development of new house types as part of dwelling typology has been a driving force for the overall development of housing design. Throughout centuries in architecture, the discourse on typology and type has been part of the quest of the ultimate essence of architecture. Each period has viewed the concept of type from different standpoints and contexts. The concept and its interpretation are also culture bound. In Finland, Kirsi Saarikangas has, in the last few years, brought to light the impact that the design of type houses has had on the concept

of space and dwelling in Finnish housing design on one hand, and the significant influence it has had in the formulation of the ideals in housing on the other. The two terms, the house type and the type house must be distinguished from one another. Type house is an industrial pre-fabricated house or a kit-house that can be copied, whereas the house type is a wider concept embracing the conceptual architectural idea of a house. New house types have provided examples of the potential that housing design can offer and subsequently, by suggesting new ways of thinking, they have also questioned the existing practise in housing. The way the concept of type is understood in society influences the way housing stock is realised.

#### THE PREREQUISITES FOR THE REFORM IN HOUSING DESIGN

Housing design can only be renewed if there is a shared will in the entire design and production process to develop and reform. The mere design of new house types will not lead to reform if the production system does not make their changing process and realisation possible. The production processes in housing include the entire field of design, the planning, the developers, the building materials industry, the builders and, above all, the objective-orientated housing policy that must guide the development from the basis of people's needs and the principles of sustainable development.

The typological development that takes into account the potential future needs and the temporal sustainability demands a lot from design. Design incorporates a great deal of work that is not necessarily immediately obvious, or easily identifiable by occupants who may only be able to see whether a dwelling responds to their needs, or functions well. In order to achieve longevity in housing, it is necessary in design to take into account the lifespan of the occupant and the changes in generations, all of which considered and innovative architectural design embraces. For the architect this means thorough concentration and work, which, at present within the current housing production system, is not easily understood or valued, and for which nobody is prepared to pay. However, this input from designers, will be needed in order to achieve sustainable community structures. The reality of housing design in 21st century Finland does not correspond to the objectives of typological development. As a result of the hard economic competition, designers live on the edge of financial viability, which is becoming increasingly apparent in the resultant variation in the quality of design. Many architects, who are still designing in accordance with some ethical principles and aiming to achieve the best possible design result, end up having to literally pay for

the fact that they are designing housing. Fees no longer cover all necessary design work. In order to be successful in the present climate of competitive pricing, one has to resort to a conveyor-belt style work, and to reproducing and copying old designs. In a situation like this the most creative and able architects may gradually divert their efforts to other creative areas or to countries where the circumstances still allow for work to be carried out properly.

The realisation of compact and sustainable community structures sets high demands for planning, too. Planning, in its present form in Finland, is a slow process and this also contributes to the constraints on housing production. The repeated design process, first at planning stage and then in actual building design, and the potentially changing needs in between the planning stage and the realisation of a project, pose a significant problem in housing design. The planning of areas consisting of predominantly individual houses is largely based on existing, well-known house types, such as detached or terraced houses. If the master plan does not allow for other types of houses, they will not be built either. In the design of a house functional and spatial design are directly linked with the design of the building plot and the surrounding context. They are so tightly interlinked that planning without the design of the houses will easily lead to artificial and inflexible and static house design. In order to achieve an environmental structure of reasonable quality the planning stage must also consist of expertise in house design. The most innovative phase of design should take place at the planning stage, allowing for the development of new house types at the beginning of the design process which will subsequently be reflected in the housing production. The tighter relationship between planning and building design would have a significant impact on entire areas as well as on the overall quality of the environment. This would also provide a means to ensure the introduction of new ideas and the future development of architecture. Planning and building design should already be interconnected at the planning stage.

Traditionally housing policy has been conceived mainly as development work aiming at improving the social conditions related to social housing, or as some kind of support measure associated with housing. In present society, where the objective is for a sustainable community structure, housing policy is beginning to attain other connotations, which will concern us as well as future generations. The discussion should be broadened from how we can develop housing and the construction of housing, to how we could render the actions directed towards housing into wide-impact and positive factors in the overall process that will give form to our living environment. In the development of typological flexibility the spaciousness of the living space forms one the pre-requisites for good and sustain-

nable housing solutions. It is also vital for better dwelling conditions. However, it cannot be achieved without objective-oriented housing policy guidelines and the subsequent renewal of the production system that shapes our environment.