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INNOVATION IN COLLECTIVE HOUSING
Theory/ Practice / Guidelines

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Abstract

Die Sektoren Geschoßwohnbau und Einfamilienhäuser stellen zwei vollkommen unterschiedliche Sparten der Wohnraumproduktion dar, die auf verschiedenen Produktionsprozessen basieren. Nutzer- und PlanerInnen agieren hier auf unterschiedliche Art und Weise, Finanzierung und Entwicklungsprozesse laufen jeweils anders ab. Einfamilienhäuser werden auf direkten Wunsch der NutzerInnen und auf Basis der Bedürfnisse ebendieser geplant und gebaut. Geschoßwohnbau bedarf einer höheren Vorfinanzierung und wird ohne direktes Einbeziehen der NutzerInnen produziert. In den beiden Sektoren sind große Unterschiede in Bezug auf Änderungs- und Anpassungsprozesse erkennbar. Experimente sind im Einfamilienhausbereich keine Seltenheit, im Geschoßwohnbau jedoch sind sie kaum anzutreffen und meist beschränkt auf allgemeine Aspekte wie die Fassade, die Erschließung oder die Gruppierung der Wohneinheiten. Selten aber betreffen sie den Raum oder die Leistungsfähigkeit der Wohneinheiten selbst.

In der zeitgenössischen Architekturdebatte wird oft die Frage aufgeworfen, ob die bestehenden Systeme in der Lage sind, adäquate Lösungen für den Geschoßwohnbau anzubieten. Da die Standardbedingungen, welche die Basis für moderne Wohntypologien darstellten, ihr Gültigkeit verloren haben, müssen auch aktuelle Modelle, die nach wie vor auf den Ideen der Moderne aufbauen, auf ihre Fähigkeit, auf schnell ändernde Bedürfnisse zu reagieren, untersucht werden. Entwürfe, die versuchen, auf die veränderten Bedingungen zu reagieren, beschränken sich auf einzelne Fälle, die in erster Linie von ArchitekInnen und PlanerInnen geschätzt werden. Es fehlt ihnen die Kraft, nicht nur einmalige Lösung zu sein, sondern vielmehr die Massenproduktion zu beeinflussen und damit echte Innovation zu sein. Der Großteil des zeitgenössischen Wohnbaus bleibt deshalb einem fast 80 Jahre alten Regelwerk verhaftet. Die Folge ist eine Gesellschaft in starkem Wandel, die kaum in der Lage ist, die Leistungsfähigkeit der bereits gebauten Umwelt zu erhöhen.
Das Thema ist auch auf globaler Ebene relevant: Geschoßwohnbau ist zu einer unvermeidbaren Lösung in einer immer stärker urbanisierten Welt geworden. Viel hängt von seinen Qualitäten, seiner Attraktivität und der Möglichkeit, von Anfang an auf gegenwärtige und zukünftige Ansprüche zu reagieren, ab. Ziel dieser Arbeit ist es, Innovation im Geschoßwohnbau zu untersuchen, um aufzuzeigen, wo mögliche Potentiale für Veränderungen liegen und wie sie genutzt werden können. Der Fokus wurde dabei auf die Prozesse sowie das Management von Innovation und weniger auf innovative Projekte an sich gelegt.

Dem Begriff der Innovation wird in vielen Disziplinen nachgegangen. Die Frage, was unter Innovation zu verstehen ist und wie sie funktioniert, ist Thema der Wirtschafts- und Managementwissenschaften. Den wichtigsten Bezugsrahmen stellt hier die industrielle Produktion dar, was zu der Annahme führt, Innovation steht in direktem Zusammenhang mit Wirtschaftlichkeit/Marktfähigkeit und Effizienz. Aktuellere Studien widmen sich dem Begriff post-moderner Innovation. Eine Betrachtungsweise, bei der Technologie nicht zwangsläufig eine große Rolle spielt und Mehrwert nicht ausschließlich von steigendem Profit und höherer Effizienz abhängt, sondern vielmehr die Vorteile für die Gesellschaft als Ganzes betrachtet werden. Zu diesen Studien zählen jüngste Untersuchungen zu Service- und Design orientierten Neuerungen, ebenso wie soziale Innovation und Innovation in Politik und Planung.

In der Architektur treffen verschiedene Sichtweisen zu Innovation, die in anderen Disziplinen entwickelt wurden, aufeinander. Untersuchungen, wie Innovation in der Architektur funktioniert, beschränken sich bisher aber vor allem auf konstruktive und technologische Sichtweisen. Innovationen in Zusammenhang mit der Fähigkeit auf Änderungen zu reagieren und damit verbundene Prozesse, die technologischen und industriellen Entwicklungen gegenüber stehen, wurden bisher nicht erforscht.

Es steht außer Frage, dass Technologie sowohl in der Vergangenheit als auch in der Gegenwart einen wichtigen Ausgangspunkt für Innovation im Wohnbau darstellt. Neben neuen Materialien beeinflussen auch die Bereiche ‚intelligent housing' und Kommunikationstechnologien die Art und Weise, wie wir denken und wie wir unseren Wohnraum benutzen. Es ist jedenfalls eine sehr spezielle Art der Innovation: der Einsatz von Solarpaneelen kann leicht argumentiert werden, die Kosten für die Installation kann einfach mit den Einsparungen bei den Energiekosten verglichen werden. Die Vorteile eines ‚besseren' Grundrisses sind weit weniger offensichtlich. Auf Technologie bezogene Neuerungen schlagen meist Änderungen vor, die finanziell klar kalkulierbar sind. Die Vorteile von Typologie-basierten Änderungen können weniger in Zahlen belegt werden, hängen sie doch stark damit zusammen, wie die Bewertungskriterien definiert werden (wann ist ein Grundriss besser als ein anderer) und wie die beteiligten Akteure die Dinge betrachten (für wen bringen Neuerungen eine Verbesserung). Da die räumliche ‚Hardware' nur schwer verändert und der Grundriss einer Wohneinheit nachträglich nur schwer adaptiert werden kann, ist dieser einer der entscheidendsten Faktoren und maßgeblich verantwortlich für das Potential einer Wohneinheit, in der Zukunft zu bestehen und somit für das Maß seiner Nachhaltigkeit.

Diese Arbeit schlägt ein konzeptionelles Gerüst für die Besonderheiten im Geschoßwohnbau vor, indem sie fünf Schlüsselfragen untersucht (Was ist Innovation? Warum werden Neuerungen vorgenommen? Welche Art von Neuerungen? Welchen Wert haben Neuerungen? Was passiert mit den NutzerInnen?) und die Suche nach dem Mehrwert im Geschoßwohnbau mit bestehenden Untersuchungen post-moderner Innovation in Verbindung bringt. Das Gerüst wird anschließend an Hand von fünf Fallstudien getestet, um Verständnis darüber zu bringen, wie Innovation in der Praxis funktioniert, auf welche Grenzen sie stößt und wie eine mögliche Rolle der ArchitektInnen in diesen Prozessen aussehen kann.
Mit der Verbindung bereits bestehender Forschungsfelder über Innovation und dem Geschoßwohnbau möchte diese Arbeit einen bisher fehlenden Beitrag zum Verständnis und der Förderung von Innovation im Geschoßwohnbau und vielleicht auch darüber hinaus anbieten. Die Bedeutung ist vielfältig: Neben allgemeinem Verständnis spezifischer Mechanismen und Mustern im Geschoßwohnbau, bietet diese Arbeit ein Gerüst, um Vorzeigebeispiele zu analysieren und von diesen im Hinblick auf Innovationsprozesse, zu lernen. Aus den Fallbeispielen geht eine Reihe an Arbeitshypothesen hervor, wie innovative Formen entstehen und gesteuert werden können. Diese Hypothesen wurden als Leitfaden formuliert, der sich an die verschiedenen am Prozess beteiligten Akteure (ArchitektInnen, AuftraggeberInnen, StadtplanerInnen) richtet. Zu Letzt reflektiert die vorliegende Arbeit über die Rahmenbedingungen, die Innovation möglich machen oder verhindern und untersucht mögliche Rollen, die ArchitektInnen im Zusammenhang mit der Entwicklung innovativer Lösungen für den Geschoßwohnbau einnehmen können.

Abstract

Collective and single-family housing represent two separated segments of the housing production, based on fundamentally different production processes, where final users, planners and financing partners interact in very different ways. Single-family housing is a user-based, customized production. Collective housing involves a much larger initial financing and produces upfront. There are radical differences in how change takes place in the two segments. Experiment in single-family housing is no exception, yet it is rare in collective housing and mostly limited to the general aspects of the building (facades, circulation, grouping of the units), rather than the space and performance of the dwelling itself.

In the architecture discussion consistent doubts have appeared about the capacity of producing adequate solutions to the collective housing problem both in design and in implementation terms. As the predefined set of standard conditions that formed the basis for Modern housing typologies have lost their applicability, the capacity of the current model – still based on the modern approach - to adapt to fast changing needs is being questioned. Design proposals that attempt to react to these new conditions remain isolated cases cherished among architects but few ones else. They lack the power to move from being a one-off intelligent solution to effecting mass production, thus becoming real cases of innovation. As a result, the greater part of the contemporary housing production remains anchored to a set of rules defined almost 80 years ago. The consequence is a society in strong flux with little urge and capacity to upgrade the performance of most of its built space. The issue is relevant at a global scale: collective housing has become an unavoidable choice for an increasingly urbanized world. Much depends on its qualities, its attractiveness, its possibilities to respond from the beginning to present and future needs. The aim of this work is to investigate innovation in collective housing, in order to understand where the potential for change lies and how it can be used. To do this, the attention has been set on the process and the management of innovation rather than on innovative results in themselves.

The notion of innovation is dealt with in various disciplines. The issue of what innovation is, and works, is treated in the economic and management disciplines (innovation economics, industrial economics, management of innovation). Here the main frame of reference has been industrial production, and this translates in the assumption that innovation has to do with both profitability/marketability and efficiency. More recent studies have worked on the notion of post-modern innovation, where technology does not necessarily play a big role, and where the added value is not exclusively related to increased profit, or efficiency, but as well to advantages tilted towards society as whole. To these studies belongs recent research on service-based and design-driven innovation, as well as social innovation and innovation in policy and planning.

In architecture a variety of perspectives about innovation developed in other disciplines converge, from technological, to social to design-driven. Yet, research about how innovation works

in architecture remains mostly implicit and limited to the construction and technological perspective. Innovations related to changing performance and processes, as opposed to technology and/or industrial based ones, have been mostly left out, or not explicitly researched in an innovation perspective.

It is clear that technology represents an important source of innovation in housing, for both the past and present. Next to new materials, the whole field of intelligent housing and communication technology is changing the way we think and use domestic space. It is however a specific kind of innovation: it is easy to argue for a solar panel, whose installation costs can be compared to the related savings in energy bill. Or for extra technology, offering an immediately usable extra performance. The advantages of a 'better' floorplan are much less clearly cut. Technology-based innovation is mostly proposing a calculable monetary advantage. Typology-based innovation is not an issue of amortization, as its advantages depend much more on how we define the value criteria (when is a floorplan better than another) and on the perspective of the involved actors (better for whom?). Nonetheless, as the hardware of the space can hardly be changed, a floorplan, once chosen and built, is difficult to alter, and will be one of the most determining features over the long term of a built housing, defining its potential to resist in the future and thus its sustainability.

This work proposes a conceptual framework for the specifics of collective housing innovations beyond technology, by answering five key basic questions (what is innovation, why innovate, which kind of innovation, which value, what about the users) and linking the search for added value in collective housing to existing research on post-modern innovation. This framework is then tested through a series of five case studies, aimed at providing the necessary additional understanding of how innovation can work in practice, which barriers does it encounter, and what is the possible role of the architect.

By opening up a new link between already established fields of innovation research and collective housing, this works intends to offer an until now missing structured approach to understand and promote innovation in collective housing and possibly beyond. Its relevance is manifold: next to a general understanding of specific mechanisms and patterns for collective housing, it offers a structure to analyse and learn from best-case practices from the point of view of the innovation process, and not only of the achieved architecture results. Out of the case studies, a series of working hypothesis emerge about how to conceive and steer innovative production of collective housing. These have been formulated as guidelines aimed at various actors involved in the process (architects, initiators, urban planners). Finally, the work provides a series of reflections about conditions that enable or prevent innovations from happening, including the possible roles that architects can take in developing innovative collective housing solutions.

Acknowledgements

Between June 2001 and March 2003 I was part of the development of the one north masterplan in Singapore. My role was to be the go-between between the office of Zaha Hadid, who had won the commission for the masterplan, and the client, the Jurong Town Corporation, put in charge by the government to develop this new part of the city of Singapore into a new Silicon Valley made in Asia. The aim was to implement a highly innovative planning approach and achieve a deep reaching innovative result. During those months, while directly experiencing the gap between intentions and reality, I started to question how innovation works in the planning and design environment.

It has taken a long time to come to put together this proposal, possibly still more a beginning than an end. The tortuous way I followed, with many discontinuities and unplanned breaks, has not really been an advantage. Still, the theme remains of relevance, even more today than when I started ten years ago: in front of diminishing public resources, the issue of how to use them effectively increases in relevance. In front of a growing marginalisation of the role of the architect, the question of how her/his creative input can specifically contribute to a process able to achieve better performing products and results requires an open mind.

I would like to thank many people that in these years have listened to my questions and provided feedback. Among them: Professor Cuno Brullmann, who patiently waited until I was finally able to pull it all together and reminded me that enthusiasm is the key; Professor Jens S. Dangschat who helped me finding the red line when it was getting lost; my mother who even not being an architect has been reading through it all more than once, and of course Thomas, who saw the necessity of making this effort much before me, but never could have imagined it taking so long and so much.

Silvia Forlati

INNOVATION IN COLLECTIVE HOUSING

Theory/Practice/Guidelines

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INTRODUCTION

Theme and aims of the work

In developed countries housing represents today the most relevant segment of architecture production. Yet in the architecture discussion consistent doubts have appeared about the capacity of producing adequate architecture solutions to the housing problem both in design and in implementation terms.

Individualization, new family structures, new technologies, new working conditions, increased mobility and diminishing resources have created new patterns and expectations in everyday lives. Diversification and a rapid increase of living standards have become part of the equation. We seem projected to need more space and different space. Questions such as: who is doing what at home? when? with whom? for how long? require new answers.

As the predefined set of standard conditions that formed the base for modern housing typologies have lost their applicability, the capacity of the current model –still based on the modern approach - to adapt to fast changing needs is being questioned. Design proposals that attempt to react to these new conditions remain isolated cases cherished among architects but few ones else. They lack the power to move from being a one-off intelligent solution to effecting mass production – thus becoming real cases of innovation. While the greater part of the contemporary housing production remains anchored to a set of rules defined almost 80 years ago, a society in strong flux appears to have little urge and capacity to upgrade the performance of most of its built space. The issue is relevant at a global scale: collective housing has become an unavoidable choice for an increasingly urbanized world. Much depends on its qualities, its attractiveness, its possibilities to respond from the beginning to present and future needs.

The aim of this work is to investigate the process of innovation in collective housing, in order to understand where the potential for change lies and why change is so difficult. To do this, the attention will be on the process and the management of innovation. The expected result will neither be a planning theory nor a manual. It will be a reference frame, an orientation kit, for multiple users: architects, who design the product, but know little about innovation as a process, and whoever, (a city administration, a group of private investors, a developer, a private institution) might start looking for something new and therefore wishes to achieve innovation in the field of collective housing.

State of affairs

Housing is a central theme in the architecture debate. This centrality - specifically for what concerns collective housing - is relatively new. It was only with the Modern Movement that architects started to consider housing for the newly urbanized working class part of their task and developed a series of design approaches that responded to this specific brief. Many of the ideas developed

then, such as typology, minimization, standardization, remain at the core of the current approach and production. Yet, some of the initial aims have never been achieved. The ideas of flexibility, prefabrication, and of an embedded extra-capacity beyond functional and spatial minimization, have not found their way into the actual mass production. Today, because of changes taking place in society, these 'lost' ideas are still central to the internal disciplinary debate, as architects consider them key to achieve long-lasting dwelling spaces, adaptable over time to the changing needs of a society in constant transition. While these features remain the core statement of many recent example of best practice in collective housing, they still are very far away to achieve a significant influence on the main production.

The relevance of innovation processes concerning housing goes beyond architecture. The discussion about the role of housing, and collective housing in particular, is as well a relevant policy issue. As public intervention in its various forms is almost everywhere part of the equation, a central question for many city administrations has been and is how to combine profit driven developments with long term qualities, such as stimulating urban spaces over time, attractive/resistant typologies for a variety of users, etc. This question is urgent, as cities increasingly compete with each other in order to attract social capital, and housing is one of the defining parameter for an attractive urban environment.

Architecture publications about exemplary projects abound. The tendency is however to look at the innovative end-results, while an analysis of how did the process work, which actors and positions were involved, and how the users and market reacted is rarely part of the package. Additionally, there is little effort done to provide a better understanding of the relation between the high-end, architecture driven, innovative production and the 'normal', standardized one that in the end accounts for most of the built housing environment. This lack of focus is reflected in the lack of a disciplinary link between the architecture debate/ know-how and the scientific understanding of what innovation is and how it works.

Innovation is studied by various disciplines. What innovation is, and works, is vastly treated in the economic and management disciplines (innovation economy, industrial economy, management of innovation). Innovation economy works on a general definition of what innovation is in terms of process and product change. The basic thinking distinguishes between invention (the idea) and innovation (the implementation of the idea in the production process). The main frame of reference has been industrial production, and this translated in the assumption that innovation has to do both with profitability/marketability and with efficiency. More recent studies have developed the notion of post-modern innovation including changes that are not necessarily related to increased profit, or efficiency. The enlarged post-modern notion of innovation has opened the research on innovation to many fields previously discarded, as well as the possibility for cross-sector research and - as it is argued here - to the typological aspects of architecture in general and of collective housing in specific.

INTRODUCTION

Subject of enquiry

This work proposes and tests a conceptual framework to approach collective housing innovation, by analyzing relevant notions developed in these fields of research and relating them to the specificity of collective housing production.

The work focuses exclusively on collective housing. Single-family housing is a user-based, customized production. Collective housing involves a much larger initial financing and produces upfront, before the users can express their expectations. These segments are based on fundamentally different production processes, where final users, planners, financing, etc. interact in very different ways. There are radical differences in how change takes place. While experiment in single-family housing is no exception, it is rare in collective housing, and mostly limited to the general aspects of the building (facades, circulation, grouping of the units), more than the space of the housing unit (flat) itself. If innovation is slow, the rate of obsolescence of the newer buildings is high. Are better solutions possible? How? The Spanish architecture critic and publisher Gustavo Gil Galfetti (1997) writes of an 'untouchable heart', referring to the unchanging domestic interior of most collective housing realizations. The work will look at a range of possible explanations for this 'untouchability'. Is it really a heart? And why untouchable?

Secondly, the work focuses on post-modern notions of innovation, concentrating on changing typologies and processes, as opposed to technology – industrial based ones. Technology has been and is an important source of innovation in housing, both in the past and in the present. Next to new materials, the whole field of intelligent housing and communication technology is changing the way we think and use domestic space. It is easy to argue for a solar panel, whose installation costs can be compared to the related savings in energy bill. Or for extra technology, offering an immediately usable extra performance. The advantages of a 'better' floorplan are much less clearly cut. Technology-based innovation is mostly proposing a calculable monetary advantage. Typology-based innovation is not an issue of amortization, as its advantages depend much more on how we define the value criteria (when is a floorplan better than another) and on the perspective of the involved actors (better for whom?). Nonetheless, as the hardware of the space can hardly be changed, a floorplan, once chosen and built, is difficult to alter, and will be one of the most determining features over the long term of a housing building, and consequently determining its potential to resist in the future, thus making this building, among other advantages, more sustainable.

Thirdly, the work is developed within an European perspective and on the specificity of the European housing production. Europe is not a single housing market and different national approaches to collective housing can be observed both in terms of policy and design. Yet shared themes and major common trends can be also seen, such as common demographic characteristics or similar policies concerning the stepping out of the public hand from the housing market. The finding are however assumed to be of relevance in a variety of other contexts outside of Europe.

Proposed methodological approach

Central to this work is an explorative approach. The attempt of combining relevant notions of innovation from economics and other social sciences with the current architecture housing debate and design practice is uncharted territory. It has however reference in other cross-sector research approaches specific to innovation, where in the last years notions mostly developed within the research in the field of business and/or industrial business innovation have been 'exported' to other innovation fields, such as social innovation (Phills et al 2008) and design-driven innovation (Verganti, 2009).

The case studies represent an additional tool to test hypothesis delivered by the theoretical research and develop new ones on the basis of adductive approach and a cross-case analysis. The analysis looks beyond the mere product/realized design, focusing on the whole development process, including the use phase. At the same time, the work collects previously unpublished information necessary to understand the specificity of the project and of the innovation achieved, as well as highlight common innovation patterns.

Structure of the work

The work is developed along five sections, starting from key positions in the more recent architectural debate about collective housing and its lack of a structured approach to how to implement innovation (*I. Missing link*). In order to develop a conceptual framework for the specifics of collective housing innovations, relevant notions of innovation as developed by economic and other social sciences are then related to housing production (*II. Conceptual framework*). This framework provides the basis to map and cross-reference a series of five case studies of innovative collective housing, focusing on how innovation can work in practice, which conditions are helpful, which barriers it encounters, what are the key roles in the process (*III. Empirical research*). The last section contains the detailed analysis of each case study (*IV. Case studies*). The final section reviews the main results of the work and the open questions to be followed on (*V. Conclusions*).

(I. Missing link) A shared vision among architects and critics is the creation of some kind of excess capacity for housing. Yet the developed approaches provide mostly a vision about the What (to change) but not the How. This missing link, between the identification of relevant levels of additional performance and their implementation, is instead widely explored in the field of innovation studies, as innovation is defined as a product or process that achieves an extra-value of some kind. Thus a cross-sectoral approach to the issue of innovation represents an important step to construct this link, and, through this link, it is possible to contribute to the quest for better performing collective housing.

(II. Conceptual framework) But what is innovation and how does it work in the context of collective housing? In architecture a variety of perspectives about innovation converge, from technological, to social to design driven. A univocal definition of what an architectural innovation is,

as proposed for example for social innovation, appears not possible. The definition of what an innovation is, which aims it has, and how does it work in architecture will instead depend on the selected perspective. The investigation about a possible framework is developed along five basic questions:

- how can innovation be defined and how the post-modern notion of innovation can provide new perspectives about what innovation is in architecture, beyond technological improvement (*What is innovation*);
- why and for whom is innovation for collective housing needed, with specific focus on how societal and political changes have transformed the role of collective housing and underpin the need for new approaches (*Open challenges for collective housing*);
- what are the types and patterns of innovation relevant in the context of this work, with particular focus on the distinction between radical and incremental innovation, and what can existing models of innovation tell us about the specific of collective housing development (*Innovation in collective housing*);
- how can value be systematically defined in the housing context and how the different available definitions are reflected in the approach to innovation of the various actors (*Which value added*);
- how does the relation between innovative housing products and users works, also in relation to a perspective of contemporary society based on social milieus and values (*What about the users*).

(III. Empirical research and IV. Case studies) As little systematic research is available in the field of collective housing innovation, these sections extend the developed theoretical framework through the mapping of series of case-studies. The selected reference for the mapping is a model proposed for innovation in service-based sector (Barcet 2010) and its four levels of analysis: the aims of the innovation (why/for whom), the concept (what), the process of production and/or provision(how) and the resources needed to achieve the results (with which resources). On the basis of the resulting cross-case analysis, the section proposes a series of guidelines thought to support innovative processes of innovation, both highlighting best practices and obstacles to be found on the way.

(V. Conclusions) Even in front of recognizable and embedded difficulties in the sector, the conclusions identify three potential areas of 'intervention' to raise the innovation level of collective housing and its sustainability:

- the possibility of further pursuing cross-sector research about the mechanism of innovation;
- the potential for architects to achieve a more clear role as in the process of innovation and its management beyond pure building design;
- the potential of new combinations of hardware and software for the development of new innovative housing products.

The proposed agenda setting aims at further developing these research areas .

Results

The work offers a better understanding of innovation processes in collective housing by opening up a new link between established fields of innovation research and architecture. The potential of this link are manifold.

First, by doing so the work provides a conceptual framework hereto missing for the central issue of what innovation is and how it works both in collective housing and architecture in general. Through this framework, it is possible to achieve an in depth understanding of best-case practices from the point of view of the innovation process, and not only of the achieved architectural results. The mapping structure proposed for the case studies is in itself a possible result.

The analysis provides new synthetic knowledge about the mechanism of innovation, about enabling conditions and barriers. On the basis of this analysis it is possible to extract a series of working hypothesis about how to conceive and steer innovative production of collective housing, thus providing a useful practical guide.

The works provides relevant insights about the roles of the various actors in the 'management' of innovation and an insight about possible competences that architects might be interested to acquire if they want to act as 'innovation managers'.

I. MISSING LINK

I. MISSING LINK

1. THE MODERN MODEL OF COLLECTIVE HOUSING

Much of the way in which architects, users and other involved actors conceive and develop housing has to do with the radical changes promoted in Europe during the Modern movement at the beginning of the last century. Many ideas still relevant today were developed in response to the appalling living conditions of the working class in industrialized city. The following pages propose a brief summary of the principles at the base of this model, that still represent a strong reference for current collective housing.

Collective housing before the Modern Movement

Collective housing, in the sense of multi-storey building containing more dwelling units connected by internal staircases, existed long before industrialization. Examples could be found already in Imperial Rome, and all along European and the most recent American building history, as a **response to high density** in urban contexts. Yet, the examples of collective housing before industrialization were essentially specific local solutions that remained both geographically and historically **isolated cases**, even if sometimes presenting striking similarities.

With industrialization and the consequent urbanization, collective housing became a recurrent solution all over Europe and beyond. Initially architects were used only in the case of 'higher class' users, while **housing for the lower classes was seen more as an issue of infrastructure and therefore not part of the scope of the professional architect.** Only with the Modern movement this kind of housing became seen a universal solution to the issue of urban housing for the masses and became understood as an architectural issue.

Even before the introduction of the elevator, this kind of buildings could actually house **a high degree of social mix, being developed partly for middle and higher classes**. The **stigma of being housing for the poor** was however common, as the acceptance from the side of the higher classes- able to choose other lower densities alternatives- was circumscribed to specific situations and partly depending on the technological advancements such as the lift.

The introduction of the lift technology, by easing the accessibility of the higher floors, represented a turning point for such buildings, both in terms of possible number of levels and achievable comfort. Consequently the lift turned around the social layering – making the higher floors the most desirable ones**.**

Collective housing in this time as well as later on was almost exclusively developed as **rental housing, built by a private owner, following market logic of speculation.** Until World War II in no country in Europe there was actually a legal framework that allowed more owners for the various dwellings in a building (see text box p. 21)

Archaeological excavations document the presence of ***insulae*** both in Rome, starting from the 3rd century before Christ, and in the harbour city of Ostia from the 2nd century after Christ. These buildings were constituted by a series of dwelling units (the so-called *cenaculae*) distributed over up to six levels. The *insulae* were owned by one person, and let often by an administrator. Literary sources report on the difficult living conditions and on the high rent paid by the tenants. Because of both high fire risk and of bad quality of the construction, Emperor August set up rules about maximum height and fire-walls. In some cases - mostly in Ostia - frescos or painted decorations, as well as the number of rooms and infrastructure of the dwelling, reflected the comfort level of a domus, or at least what required by middle-high income inhabitants. Other cases- predominantly in Rome- had commercial spaces on the ground, and much simpler dwellings above. In both these configurations, comfort diminished with the number of levels. The poorer dwellings were on top, without water connection and usually just one room for a whole family nucleus (Liedtke, 1999, p.706-736).

After the Roman examples, multileveled housing typologies were again developed in Europe starting from the 16th century, in the context of the general urban renaissance that took place at that time. Apartment buildings existed in Edinburgh and Glasgow. The term flat was coined in this context, from the Scottish word 'flaet', meaning storey. Used by wealthy classes, they usually reached ten to eleven floors, and in one case fourteen (Wikipedia). The so-called ***Hebergen***, existing in Munich since the 16th century, were houses with levels divided in more flats with different ownerships and some shared spaces such as the attic (Wischermann, 1997, p.347). The ***Venetian palazzetto***, thanks to its interlocking staircases, was able to offer separated access ways to the different levels, so as to create independent units with own vertical connection within one building.

Etagenwohnungen (literally, one-floor dwellings) had been built since the 17th century in the German context. Similar typologies were usual also in Paris, where the building included a commercial ground level. These houses were developed for the middle-high urban class of the time. They were for rent, as property of the building was usually indivisible both from the site and within the building itself. As in the case of the Roman insulae, given the lack of elevators, the level of comfort decreased with the number of floors, with the wealthiest tenants living on the lower floors (the French *belle etage* was in fact the first floor), the more modest tenants in the higher floors and the servants in the attic. Alternative models, such as the Viennese ***Mietzinshäuser*** (literally translated as Rental Houses, also known as *Bassena* because of water provision through shared sinks- bassena- in the access corridors) and their Berlin equivalents, responded at the end of the 19th century to the housing needs of the growing middle class. In these typologies the street facing flats were developed for the richer households, while the courtyard sides, highly densified and lacking a proper provision of natural light and ventilation, were destined for the poorer users (Heckmann et al, 2011).

Housing for the newly urbanized working classes became major issue with the industrial revolution in the 19th century. Multilevel typologies became the most adopted housing solution in contexts such as the German ones where the horizontal expansion of the city was strictly regulated because of economic and military

reasons. In these contexts, differently from the situation in Great Britain, a tradition of densely built multi-level housing was preexisting (Wischermann, 1997, p.351). The ***Mietkasernen*** in Berlin, built from the first half of the 19th century, are one of the most studied resulting examples. They were highly speculative rental housing typologies, resulting from private initiatives. Extreme density was achieved by disregarding any kind of requirement for natural illumination and ventilation. Layout and standards they were strikingly similar to the Roman *insulae*.

Ideas concerning better housing for the working class, in response to the appalling conditions of the slums and *Mietkasernen* of the industrial age were developed already in the second half of the 19th century, not so much by architects, but directly by illuminated industrialists. One of the most interesting prototypes for what concerns forms of vertically stacked collective housing is the *Familinstère*, designed and built in Guise (Northern France) between 1858 and 1883 by the stove factory owner Jean-Baptiste Godin and inspired by the social theorist Charles Fourier (1772-1837). In the *Familinstère*, approximately 300 dwellings were divided in three four levels high blocks, each built around a generously dimensioned communal atrium covered by a glazed roof. Additionally, facilities such as nursery, school, theatre and even swimming pool were provided in the complex. The internal circulation was based on access balconies open to the atrium. The flats were divided in two generous rooms, planned in such a way that they could further be split in up to four rooms. The planning of Godin was extremely meticulous and long lasting, it even included garbage chutes. The building is still in use today- it was split in 1968 from the factory and sold to a housing cooperative. A detailed analysis is provided in the case study section.

America developed its own models of **tenement houses**, built to cater for the rising number of immigrants. Middle-class solutions became part of the urban landscape from the second half of the 19th century in form of apartment buildings, a new typology whose closest reference was the hotel building (French, 2006). The dwellings were referred to as *'French flats'*. One of the first examples were the Stuyvesant Apartments (1869), by the Paris trained American architect Richard Morris Hunt. Specific to these buildings was the inclusion of technologies such as plumbing and kitchen equipment from the start, so to respond to the American middle-class standards of the time. Starting from the late 1880s, electric elevators and fireproof steel frame construction were also used, raising the possible number of floors, and simultaneously the prestige of such solutions and making them a fashionable choice. ***Co-operative apartments*** were also available in the 1920s in New York, a concept first introduced in the early 1880s as 'Hubert Home clubs' by New Yorker Philip G. Hubert, the son of the architect of the first phalanstery of Condé-sur-Vesgre, Colombe Gengembre. These buildings were made of large duplex units housing middle-class families and their servants, with a central parlor and cleaning facilities. At least one of the original eight clubs still survives today as Hotel Chelsea, near 7th Avenue in New York (Guarneri, 1991, p.398). The word apartment was introduced first in this American context. By 1900, it has been estimated that more than 75% of urban American were living in apartments (Armstrong Hall).

The modern model: a radical revolution

Starting from the 1920s the architecture of the Modern avant-garde in Europe called for a radical break to the previous models of housing in general and collective housing in particular. A new way of conceiving, planning and building dwellings was developed, as a response to the housing needs of the new industrial age. But what did actually change in modern housing? The answers given by contemporaries and/or by the posthumous reflection highlight radical changes at many levels, whose relative importance depends on the selected perspective. Hereby following is a brief overview of these changes, along three basic levels: the product (radical redefinition of what housing is/ how it should perform), the technologies (role of new technologies for the production of housing and in the definition of its performance), the actors involved (redefinition of the role of the architects and of the public hand).

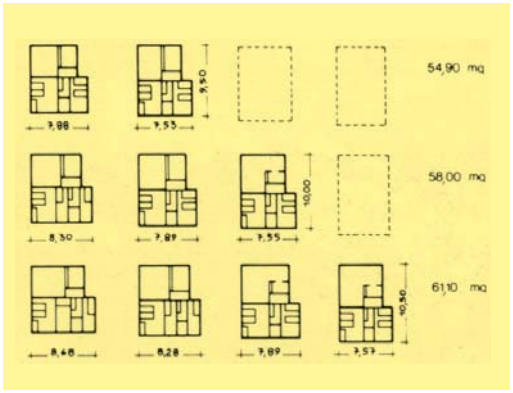
Modern architects radically redefined the housing product- what a dwelling is and how it should perform. Collective housing - with a specific attention to the needs of the new working and middle class - became understood by the architects themselves for the first time in history as a central architectural issue and its design a fundamental task for the architect. An in depth redefinition of how to conceive a dwelling space across all scales, starting from the planning and moving to the furniture was pursued, to achieve the necessary economy of scale and qualities of the living spaces. Compared to the high class housing architects were previously used to plan, housing for the working class and for the new middle class required affordability and related to a different organization of the household, where the housework was to be done by the family itself and not by a servant. At the core of this new start was the definition of the minimum acceptable requirements in terms of functions and spaces on the basis of what were believed to be universal standards: *Wohnminmum* or *Existenzminimum*. The German architect Hilberseimer (1927, p.23) defined the *Wohnminmum* as following:

'Once you organize the surface according to the requirements, (and) limit the size of the spaces to the necessary, it will then be possible to find a dwelling type that fulfils the minimal requirements of a family'[1].

Implicit in this statement are three assumptions that will constitute a very long-lasting inheritance for housing design and production. The first assumption is the focus on the organization of the plan - not the space: it is the floorplan the main tool through which architects can control the design of the dwelling. The second assumption concerns the aim: what needs to be achieved is a minimum and not a maximum, collective housing design is thus about defining the limit of the necessary. The third assumption concerns the possibility of a standard family or standard users, whose needs and way of using the space can be captured once and for all and deterministically implemented in the design.

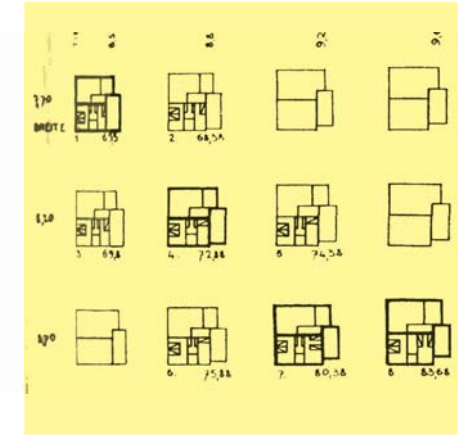
1 'Organisiert man (..) die Fläche nach der Erfordernissen, beschränkt die Raumgroßen auf das Notwendige, so kann ein Wohnungtyp gefunden werden, der die Mindestanfordernungen einer Familie erfüllt' .

Fig. 1.1
Rationalization of the dwelling (Alexander Klein 1928)



Alexander Klein: *Rationalisierung der Wohnung*, 1928, research for the Reichsforschungsgesellschaft

The design of the floorplan can be rationalized and becomes a function with a predeterminable output on the basis of given inputs. In the matrix above each row shows the possible layout and geometries on the basis of a **given dwelling area**. In the matrix below the layouts are organized on the basis of a **given width and depth of the floorplan**.



Source image above: Kähler 1996
Source image below: Tafuri and Dal Co 1972

The logic of the efficient use of space developed by the Modernism ranged from the dwelling scale to the planning one, as shown by the studies of Gropius in 1929 for an efficient planning of collective housing (Giedion 1954). Here large scale collective housing is seen as the only way to achieve what he (and for a long time many others) considered the best possible balance between the need to densify the land use and the quality of the resulting individual living spaces. In the logic of this approach the aim is the maximization of the number of dwellings with acceptable levels of light and natural ventilation, the resulting urbanity a side effect.

Radical technological change also played an important role at multiple levels in the definition of modern collective housing. Technological advancements provided the architects of the modern movement ideological justifications for the need of a new way of building[2], a source of new materials (such as concrete and steel) and new ideas for typisation and prefabrication. Next to how to build things, these advancements also changed what had to be built, that now included increasingly essential technological components of the home, such as the bathroom and a series of revolutionary housing appliances such as washing machines and other appliances for the kitchen.

2 Bruno Taut writes for example (1929, p.3): 'The justification of new architecture is derived from the change of the whole technical and in part also cultural life. And this remains, as banal as it may sound, the strongest argument for its coming into being..' .

In different cultural contexts architects took different roles. According to the architecture historian Sigfried Giedion technological advancements and the new understanding of scientific management did directly influence the reorganization of the American house. In Europe instead ***the architect became the 'mover'*** (Giedieon 1955, p.522), and thus was at the forefront of the innovation of domestic space's production. This specific role of the architects as 'mover'- as the one in the front line of change –is still very much present in the ideology of the profession, for what concerns the role of architects, and how they relate to the users, both for what concerns domestic space and beyond. Still today architects understand themselves as 'movers', educators ahead of society, right in not simply accepting what is there but confronting users with change.

The modern redefinition of the collective housing went in hand in hand with a radical redefinition also of the actors in charge of the production of housing. Society itself became increasingly seen as responsible to provide adequate housing for everybody, making sure that the basic provision of this service was not subject to solely free market laws. As housing provision became seen as a public responsibility, most European countries, especially in North and Central Europe started to set up a social housing sector at communal level at least. The ideas of the Modern avant-garde found a fertile ground in some administrations, especially in Germany who saw in the new prototypes of collective housing the possibility of solving the dramatic housing issue of the time. Much of the pivotal housing designs of the time, such as the ones by Ernst May in Frankfurt, Otto Häsler and Walter Gropius in Karlsruhe, or Bruno Taut in Berlin, were the result of this new involvement of the public hand in housing production, and its collaboration with the architects of the modern movement. Yet the influence of these attempts was limited (Tafuri and Dal Co, pg. 149 ff). Only with the Post World War Two reconstruction the ideas of the Modernism got to the core of mass housing production.

Diffusion of the model

The housing model developed by the Modernist avant-garde did not enjoy large scale diffusion initially, but provided the basis for the Post-World War Two reconstruction and the following housing boom in Europe. In this period, affordability and the consequent rationalization of the dwelling were once again at the core of housing production. They were further combined with the industrialised home building that climaxed in Europe in the 1960s and 1970s. In what some historian see as a second phase of the Modernism (Rowe 1993), the seemingly utopian ideas of many architects such as typisation and prefabrication became reality and translated in new visions for high rise buildings (French 2002, Glendinning et al 2004). The *Unité d'Habitation* by the architect Le Corbusier, built between 1946 and 1952 in Marseilles (but not prefabricated), was one of the first examples of how architects in those years saw themselves in control of conceiving and controlling a new form of urbanity in alternative to the old urban centres, where light provision, green spaces and new living standards could be achieved.

This large scale approach went hand in hand with and steady demand for new dwellings all over Europe and beyond. It was made possible by the fact that public hand was now in many European countries in charge of housing provision and that the building industry had in these countries-moved towards prefabrication. It was mostly within this kind of triangular configuration (state or municipal authorities as investor, building industry to produce the dwelling, architect as supervisor and in control of the design) that the Modernist model of collective housing became a mass product.

In this period Modernism seemed to have eventually provided a universally valid architecture model. Yet the initial belief that the reduction to the minimum would be a temporary solution and that flexibility and typological variations will be the possible was going to be proven wrong. In prefabricated production, for example, attempts to develop frame construction for housing – a good way to achieve flexible floorplans, such as the ones of Mies van der Rohe in the Weissenhof in 1927- were soon abandoned in favour of box-frame systems, where prefabricated internal dividing walls and floors are combined into a kind of frame that, like in a house of cards, become unmovable part of the building that, because of this system, is usually made our rigidly divided small units (Glenndinning and Muthesius, 2004).

The age of the current housing stock gives some ideas about of the scale of collective housing production in those years. Between 1945 and 1990, 70% of the European multi-family dwelling stock was built (from 1990 to 2004 the rate was a bit less than 10%). Production peaks for high-rise happened between the 60s and 70s in Western Europe and between the 70s and 80s in socialist European countries (PRC 2004).

According to the Eurostat data of 201, ***47% of European population lives in flats, 30% in detached houses and 22 % in semi-detached houses*** (data concerning the Euro area). The lowest rate of people living in flat is to be found in Ireland (4%), followed by Norway (7%) and United Kingdom (14%). The highest rates (up to 65% of the population) were to be found in Latvia, Estonia and Spain.

Finally, the diffusion of the model is also reflected in the introduction of a new ownership model. Starting from the 1945 new legislation in most European countries allowed for the first time the possibility of individually owning a flat, opening up this model of housing increasingly to individual ownership, and consequently to middle and higher classes (see text box in the following page).

Fig. 1.2
Average distribution of population by dwelling type (Euro area)

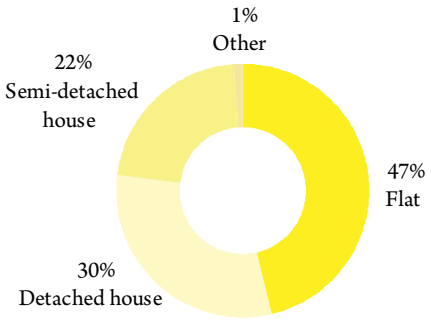


Fig.1.3
Percentage of population living in flats

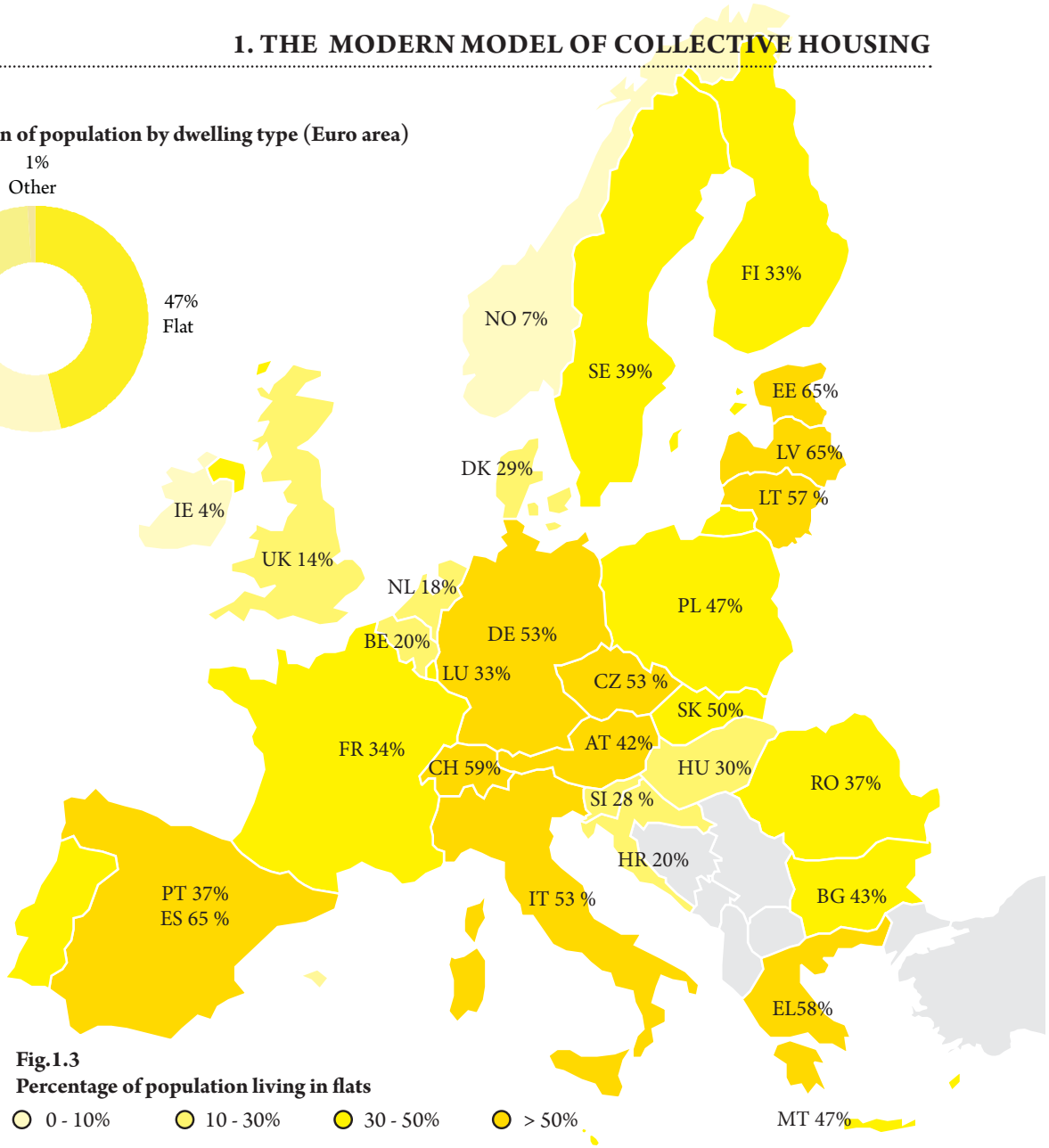


Fig.1.4
Distribution of population by dwelling type per country

Source: Eurostat 2010

Typogical approach

The typological approach to housing had become common among architects of this time and is still common today. The aim was to reduce the number of possible variations to the best, most rational and efficient options that could allow the architect to control housing design, and consequently production. Through research on typologies, architects believed that a housing model of absolute value, based on basic human needs, could be achieved.

This search for an absolute model was specific to forms of collective housing, as for example suggested by the architect Roger Sherwood (2001) in the introduction to his book *Modern Housing Prototypes* first published in 1978, and still in printing:

'Most building types, such as theatres, schools, factories, or even office buildings, have to respond to different programs and are rarely consistent and repetitive. Housing, because it consists of repeating units with a constant relation to vertical and horizontal circulation, can more logically be studied in terms of its typological variations. Although housing would seem to embrace almost unlimited possibilities, in fact there are not many basic organizational possibilities and each housing type can be categorized fairly easily' (p.2).

The result of this approach has been an extremely resilient set of floorplans and dwelling types that with little variations continue to be the basic reference for the current housing production in Europe and at global level, as many developing nations are facing similar housing supply issues as post-war Europe.

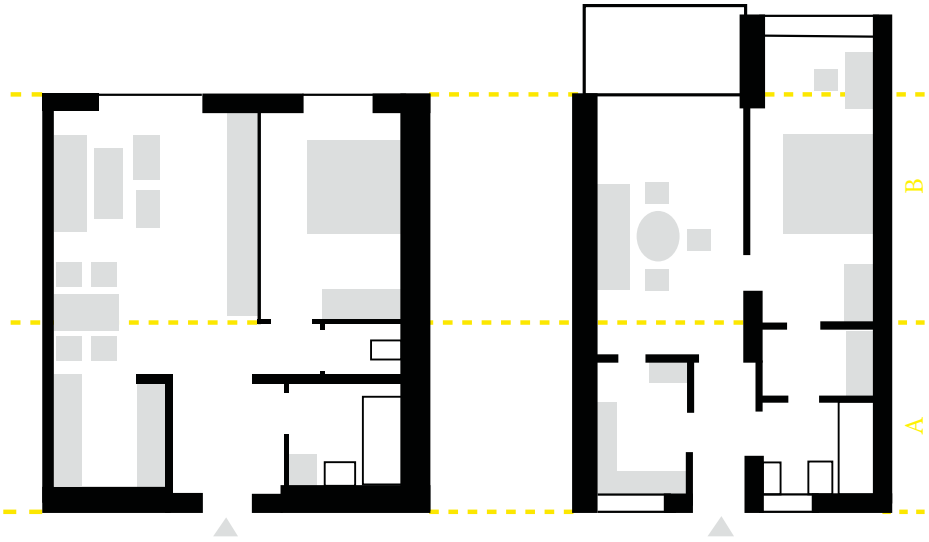
Moments of critical rethinking within the architecture discipline- such as the post-modern movement between 1970 and 1980- were pivotal in discarding an urban vision based on the logic of efficiency and zoning, reinstating the need of articulating the urban space and the value of the traditional city. Yet, this rethinking was unable to discard the essence of how collective housing are conceived and realized, especially in terms of floorplans. These floorplans constitutes still today an an ***'untouchable heart'*** (Gil Galfetti 1997), and steer the unchanging domestic interior of most contemporary collective housing realizations. The lack of success of experimentation in collective housing noted by Galfetti is part of the side-effects of the modern approach to housing design, and the question of if, why and how should change take place are the core questions of this work. The following comparison between two very similar floorplans by two famous architects produced with 75 years of difference shows how the layouts developed in the Modernism still represent a recurrent solution even in front of very different conditions and users.

Fig. 1.5
Floorplan comparison / Untouchable heart

Example of two similar floorplans produced in very different periods. The similarities include the number and type of rooms, their respective distributive layout (including the position of the bed), and some main dimensioning.

Variations include some of the proportions and some connections, and the fact that in the older apartment a small working space was included in the bedroom.

The two dwellings were developed and built 75 years apart.



Mischek-Coop Turm Wienerberg Vienna 2004
Architect: Coop Himmelblau
(source: Mischek)

Siedlung Siemensstadt 1929
Architect: Walter Gropius
(source Giedion 1954)

The possibility of owning a flat, given for granted today, is a relatively recent development: in most European countries it only became possible after the Second World War, when a form of ownership generally known by the term **'condominium'** was established. In a condominium the ownership of an individual flat or unit goes together with shared rights and obligations for the common elements of the property (roof, stairways, technical and service systems, plot of land, etc.). The introduction of this kind of ownership is a pivotal element for the diffusion of the collective housing model well beyond its initial purposes of provision of rental housing targeted to low –income groups. Previous legal frameworks usually allowed only owning a whole building together with the site where it stood. Exceptions to it, such so-called *Stockwerk Eigentum,* diffused in Germany and Austria in the 19th century, gave the possibility of separately owning different levels. Yet this system was (an actually still is, as some left-over survives) extremely problematic, because of the very unclear relationships between the various owners, with respect to the maintenance of the building, and the possibilities of changing or demolishing it. Today in Europe some countries impose condominium laws in case of multi-property housing, others leave it optional. The difficulty arising by the lack of a clear regulation can be seen in post-communist collective housing, where privatisation happened without having predefined the ownership model. Extreme difficulties in pursuing the necessary reparations and upgrading in these housing blocks have consequently arisen in these contexts. Also in better regulated contexts paradoxical situations may occur, such as windows getting painted only on the external side, when renovating the common facade, as only the outer surface of the window is shared property, while the inner surface is part of the property of each owner (personal experience in The Netherlands).

2. ARCHITECTURAL RECIPES FOR CHANGE

Architects have considered housing a central task for their profession since the Modern Movement. Yet within the architectural debate serious doubts have appeared that the current housing production is actually able to respond to the challenges that contemporay society poses to housing. In *At the Zero Point of Housing* written in occasion of the Archilab exhibition of 2001 dedicated to the future of housing, the German critic Andreas Ruby described the situation as following:

'unable to communicate with the general public, it is IKEA, or magazine such as Wallpaper that define the contemporary culture of dwelling. Given these real-time lifestyle productions, architecture finds itself in a permanent state of cultural jet lag, able only to react to the innovations of everyday life without ever being able to catch up'(Ruby, 2002, p.29).

The current production is essentially based on minimization and standardization approach developed as specific response to the need of low-income (mostly rental) housing in industrial cities in the first half of the last century. This model has shown a surprising resilience, for what concerns the organization of the building and, more importantly, of the dwelling unit in itself. It has almost become a self-constructed trap where architects and planners have fallen into and are unable to get out, even in view of the failure of many housing projects across Europe and beyond, an evident fact by the beginning of the 1970s (Rowe, 1993).
A critical revision of this approach, however needed and meaningful, is extremely difficult, as it goes to the core of the architects' know-how and forces architects to renounce the possibility – through their design based on predefined standards - of invisibly directing the norms of private conduct. By renouncing the standards, architects are required to move from ready made recipes to much more open-ended critical approaches out of the current set-ups.

Towards soft flexibility

In *At the Zero Point of Housing* (2002) Andreas Ruby pointed out two contemporary phenomena that make modern mass housing an obsolete model increasingly used to provide for the underprivileged: spatio- temporal dynamisation and typological contamination. Spatio- temporal dynamisation has to do with the increasing rate of changes in time and space that has become part of the contemporary life-styles of the majority of dwellers in the developed societies. Typological contamination has to do with the increasingly fluid zoning of everyday lives. Functions cannot be strictly separated in time and spaces, and therefore in the conception of the dwelling architects need to move from typologies fixed in time and space to another kind of typologies – prototypologies- that react to changing conditions possibly through new technologies of computer aided manufacturing, and never reach completion.

This is however a rather theoretical approach. The idea of flexibility provides architects with ready to use design solutions, and therefore the possibility to move directly from theory to design

practice. In the flexibility perspective, the solution to most of the current challenges is to design and build so that housing that can adjust to the changing needs and patterns of its users over time. This idea is recurrent in the architecture of housing of the last century and has developed into what can be defined a 'rhetoric of flexibility' (Schneider and Till 2007, p. 5) shared by most architects since the beginning of the Modern Movement. In this rhetoric, flexibility is recurrently seen as the necessary attribute to achieve long lasting and effective architecture housing solutions. But what is flexible housing? Over time, different kinds of flexibility have been seen as the way to go, as the aims that flexibly planned buildings were thought to achieved varied.

In the 20s and 30s flexibility was seen as the possibility to use one space over time with different functions, such as day and night uses. It was mostly achieved through specially defined physical devices, such as folding beds, moving walls or even rotating scenes placed in the middle of a space, as proposed by Richard Neutra and Erich Mendelsohn in 1923. This kind of flexible concepts, aimed at achieving maximum use with minimal space, were intended as a temporary solution in response to the urgent need for acceptable housing for the masses.

Mies van der Rohe proposed a different idea of flexibility in his housing block in the Werkbund building exhibition *Die Wohnung* in Stuttgart in 1927 (Weissenhof Siedlung). By liberating the floor plan from internal structural walls, Mies achieved an open system, where vertical stacking does not imply a repetition of the interiors. He even invited different architects to plan the interiors of the different flats. In the same Weissenhof Siedlung, Gropius wanted to demonstrate the potential of prefabrication based on prefixed modular elements to achieve the greatest variety of buildings. Yet very little of these ideas had an impact on the standard production.

The idea of flexibility re-emerged at the core of housing architecture debate in the 60s, albeit with a different connotation. Architects such as the Austrian Ottokahr Uhl or the Dutch John Habraken promoted flexible housing in combination with users' participation. The aim was to give the occupants the possibility of planning and realizing their own customized solutions. In Habraken especially prefabrication played again a role in combination with flexibility. He developed the concept of the ***'open buildings'*** (Boosma et al. 2000). These are made out of two kind of components: the 'structure' - a series of empty floors stacked above each other, portions of which that can be bought/ rent by the users as building parcels, and the 'infill' - prefabricated modular elements that can be assembled and disassembled directly by the users. Habraken's ideas implied a rethinking of housing should be produced, and in its being open- ended in connection to the users was typical for the time:

'During the sixties, flexibility was put forward as a kind of universal panacea, a solution by means of which the architect permitted and actively promoted a plurality, tolerance and informality in the matter of lifestyles. It was then a valid sociological response to the new spirit of freedom that was in the air.' (Galfetti 1997).

However radical and interesting, these ideas achieved little impact on built reality. Architects have instead witnessed the almost complete failure to achieve flexibility of any kind in the majority of the housing production. Paradoxically, architecture produced before the Modern movement and with no intention of being flexible has shown a much higher capacity to adapt to radical changes in terms of functions or use patterns (Schneider and Till 2007 p.3, Mozas and Fernandez p.11).

Possibly in response to this failure, the recent perspectives of flexibility have become much more differentiated. Flexibility at all costs does not make sense, but certain kinds of flexible solutions do. The British architects and researcher Schneider and Till in their book *Flexible housing*(2007) distinguish between soft and hard flexibility. The first is achieved through indeterminacy and openness towards users' choice, whereas the latter is achieved when the architect specifically defines the way in which a design can be used often in combination with devices such as moving walls, fold-down furniture, sliding doors. The potential for better housing is only in the soft, or realistic forms of flexibility, where the building is designed so to accept changes over time, by eliminating carrying partitions and providing the possibility of large, polyvalent spaces.

Creation of excess capacity

Rem Koolhas, one of the most influential contemporary architects, expresses this shift from hard/ deterministic notions of flexibility to more soft and undermined visions as following:

'Flexibility is not the exhaustive anticipation of all possible changes. (...) Flexibility is the creation of a capacity – excess capacity that enables different and even opposing interpretations and uses.' (Koolhas 1995 p.240).

The notion of excess capacity can be extended, moving the idea of flexibility from a mere design issue to something more open and involving other layers, such as the normative one. After all to be able to use a domestic space as office I do not only need the right kind of space, but also a matching regulatory framework that allows a work use in this space.

An essential part of the problem is how the value of any kind of extra capacity can fit the extreme tight budget that still steers most current housing production. In the notion of *Existenzminimum'*, or *Wohnminum* lies one of the most powerful and long lasting approaches developed by the collective housing architecture of the Modern Movement. This idea has become the basis both for much of collective housing production, even in front of raising disposable income of the users. Why? Schneider and Till see in the short-term private market logic of the housing production the main enemy of flexible housing:

'with almost guaranteed sales and well rehearsed profit margins, there is little incentive for developers to innovate and offer added value' (p.35).

Even in housing markets where consumers choice is taken seriously (US, Japan), customization tends to produce very inflexible housing, as it concentrates in the fulfilling on immediate needs and expectations of the users. The short term approach to housing is also an economical issue: the benefits of flexible planning are usually quantifiable only on the long term, which means that in a short term market logic they hardly play a role. Yet it is in this long term capacity to resist that the main attribute of this kind of housing can be found: its being 'inherently sustainable' (Schneider and Till, p.50).

The minimizing approach – as already suggested by Abalos (2001) - might also be a form of imprint within the architects thinking, still strongly embedded in the modernist paradigm. Andreas and Ilke Ruby, introducing the conference *min to max* dedicated to the issue, tried to highlight solutions able to redefine the dwelling of the *Existenzminimum* (Ruby and Ruby 2011). Taking part in this conferences were the French architects Anne Lacaton and Jean Philippe Vassal, who have developed and applied very convincing strategies for this redefinition, both for new buildings and refurbishment of existing large scale housing developments. Their approach is based on two core ideas: the idea of maximum and the idea of habitat light. They demonstrated their strategy first in a one-family house, and then in a small scale project for 14 social housing dwellings in Mulhouse (2005), as part of the experimental quarter Cité Manifeste aimed at updating the model of social housing for the working class (see also chapter III and IV). By using greenhouse principles, technologies and materials, they were able 'to produce quality houses that are, for the same price, considerably larger than the standardized housing usually met with'. In these houses, only part of the spaces are insulated and heated. Other spaces are conceived as winter gardens. As in other projects, modern and spacious housing are reached by manipulating the standards, and by cleverly providing additional low-cost intermediate surfaces that 'broaden use capacities, the varieties of spaces and climatic atmosphere, to make collective housing evolve toward the principles that characterize an individual house: verandas, almost individual access, an exterior space extending the rooms.' Their project demonstrates how it is possible to achieve an excess capacity even within standard budgets.

Yet in order to work, this approach calls for a rethinking of many recurrent normative approaches that concern housing , as well as standardized expectations and know-hows of the actors involved. Their projects question homogeneously standardized dwellings, and call instead for a much stronger articulation of these standards and of what comfort is. They call for new kind of processes, where users can easily transforms winter gardens and garages in living spaces over time, but also accepts – in exchange of more generous spaces- limitations in what is considered standard levels of comfort for part of it . Where developers are able to risk radical new concepts and typological combinations. And where authorities are able to let go the full control.

3. HOW TO MOVE AHEAD

The visions of a more long term, better housing, where an extra-capacity of some kind is embedded, call for a strategy to move a reasonable and sensitive idea to large scale implementation, beyond a few one- off solutions. Gili Galfetti, Schneider and Till (to quote some of the authors who argue for flexibility) present a remarkably interesting and inspiring collection of examples of flexible planning and show what can be achieved by this kind of housing. Little help is provided about how to implement such ideas on a sufficiently larger scale to have an impact on our built environment. The recipes provided focuses on the *what* of change, appreciated by architects, but few others. They possibly miss one essential point that makes a recipe- the need to explore not only the final results and the list of ingredients, but also the process of putting things together, thus providing the possibility of repeating the procedure in order to achieve a similar result. They remain one- off solutions.

The reasons for this lack of perspective about how to promote change are not obvious. But as a result- differently from what happened in the modernism- architecture seems not anymore at the core of innovation of the dwelling culture; the developed ideas, however interesting, do not move beyond the internal disciplinary debate. As suggested by Ruby, architects are today not anymore at the forefront of housing innovation, they are not anymore the 'movers'.

In order to respond to the challenges of contemporary European society for more long-lasting and sustainable collective housing typologies (and possibly more sustainable cities) there is a need to focus on how the idea of a new capacity can be added in collective housing production- both in terms of product but even more in term of process.

This is not exclusively an architectural issue . ***The creation of an added value for an existing product or process is in fact the defining characteristic of innovation***. A reflection about what innovation is and how it works takes place in many disciplines, with some established interdisciplinary approaches. The following chapters will hence look at how to understand, classify, and implement processes of innovation in a cross-disciplinary perspective.

In this cross-disciplinary understanding lies possibly a chance for architects, as well as other professions such as planners and city administrators, to achieve a more influential role in shaping the contemporary culture of urban dwelling, even if this role will have to take into account limitations of architects' autonomy and influence.

I. CONCEPTUAL FRAMEWORK

4. WHAT IS INNOVATION

Innovative housing is, at least from the architecture perspective, a chewing gum concept, applied in all possible situations and contexts. The number of Google entries, accordingly, is 48,200,000[2]. Of these approximately 15% are connected to collective housing innovation. (Office innovation reaches 629,000,000 entries, almost 150 times as much.) Does this high number of entries correspond to a high number of innovative products? Hardly: the Google picture search option (approximately 1000 entries) visually confronts an incongruent number of products, all labelled as innovative, ranging from technology-based new solutions to very usual ones, for which one really questions why they have been included at all. Which criteria could possibly work to filter the Google entries? I propose to avoid the architecture section of the library, and to enter instead the economics one. Starting with a classic: Alois Schumpeter.

2. Search done in March 2013

From Schumpeter to today

Alois Schumpeter's name does not appear in architecture books. An Austrian economist born in 1883, he was the first to provide an effective understanding of what innovation is, as he viewed it as the key motor of industrial economy. In 1912 he published his most famous book *Theorie der wirtschaftlichen Entwicklung*. To a static vision of the economic processes he counterpoises a dynamic one. The entrepreneur is recognized first of all as an innovator operating within a process, obtaining a profit thanks to his capacity of changing something in the existing status quo. Profit is achieved by innovating, and not by matching production with users' preferences. Entrepreneurs are the ones able to incorporate new ideas in the production process and exploiting the advantage of a being first-comers on the market effectively achieving a temporary monopoly (Piber, 2000).

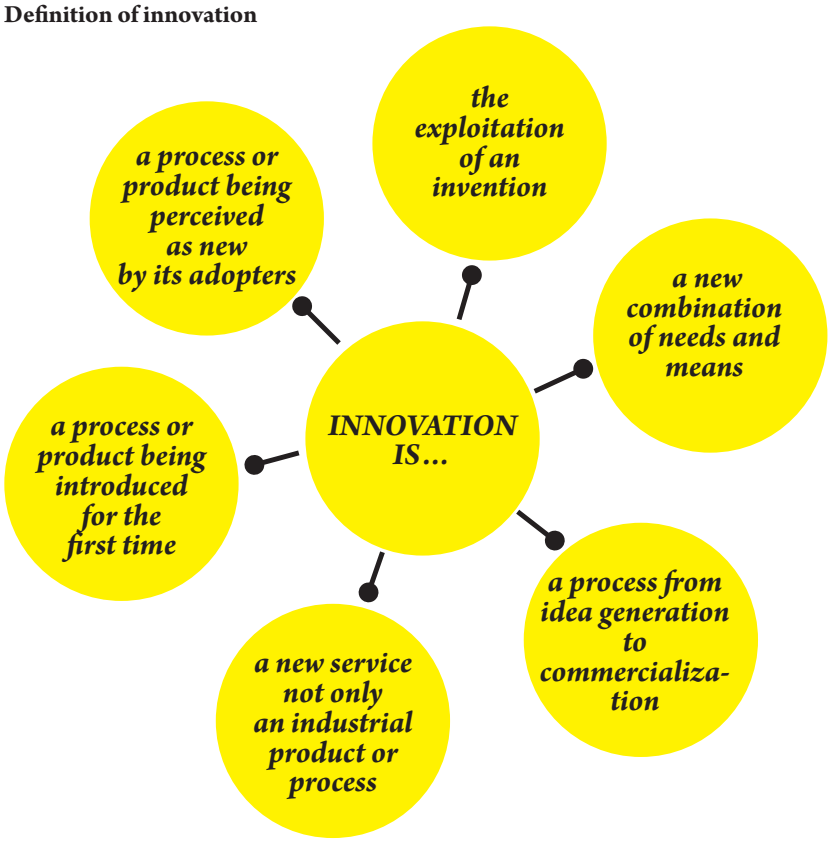
Schumpeter defines innovation as a new combination of needs and means. In his view, invention alone is not enough. Only when this combination becomes part of the production process we can talk about innovation. He distinguishes between five categories of innovation: production of a new good, innovation of the production process, creation of new markets, new sources of raw materials, new form of organization. His point of view is from within the functional categories of industrial production (Papi, 1981).

Today a wider range of definitions of what innovation has been developed. A possible list (Hauschild 2004, p.3 ff.) includes:

- innovation according to the fact and to the degree according to which something is new. An innovation is any thought, behaviour or thing that is **new because it is qualitatively different from existing forms**;
- innovation as **process or product appearing or being introduced for the first time** (here lies also the question 'new according to whom');
- innovation as **new product or process that are perceived as new by who is adopting them**;

- innovation as a **new combination of needs and means**;
- innovation as **the exploitation of an invention** (innovation = invention+exploitation);
- innovation as **process (from idea generation to problem-solving to commercialization)**
- innovation as **new service beyond industrial products and production processes**, such as financial products, social innovations as flexible working times, or different kind of reservations systems.

Fig. 4.1
Definition of innovation



(based on Hauschild 2004, p.3 ff.)

What the list above makes clear is that ***innovation has to do with changes in the status quo***. The common denominator among the available definitions is that innovation contributes in some specific new way to make things 'different' from what they have been. Different is itself a range: from more efficient or more profitable, to better in the sense of almost 'morally' better, such as innovation responding to a more general/ public interest, whatever this might be – as in the case of environmental issues. In this difference lies ***an added value of some kind***.

The traditional view of innovation referred to the process of profit-driven manufacturing and linked the possibility of an added value with a form of technological advance. Today innovation is increasingly understood as something that goes beyond technological change. It consequently

includes products and processes that have nothing to do with technique, such as social innovations, political innovations, new lifestyles. Also included are measures that do not necessarily raise efficiency or profit, but still can bring an advantage, such as environmental strategy, sport, communications, as the understanding of post industrial innovation has moved beyond industrial production/ manufacturing and its enterprise organization. Innovation has consequently become something less clear-cut. It cannot be protected through patents, and it is increasingly steered rather through networks, than by singular individuals or enterprises, as suggested by studies on lead user-developed innovations for products ranging from open source software to high performance windsurfing (van Hippel 2002). If industrial innovation could be made started in the research laboratory of a company by a group of inventors matching users profiles with new products, ***post–industrial innovation*** - also called 'reflexive innovation'- happens outside the lab, in a global context connected via networks. Behind it we find a much more heterogeneous and diversified group of actors that need to act in multiple context and with increasing reflexivity (Rammert 1997).

This shift, from a modern, linear idea of innovation, to a more open, non linear notion has moved the discourse on the dynamics of innovation to areas, such the service industry, where capital scarceness and absence of manufacturing processes previously made innovation a secondary issue. These new areas; to be described in detail in the following pages, include as well other disciplines than economics, such as political sciences, planning and in specific research on social innovation. It is also reflected in new perspectives on design–driven innovation (Verganti 2009) that look at innovations that through design define a new radical product's sense and language, beyond technological and performance improvements.

Innovation in the service industry

The study of innovation in the service industry started only in the early 80s. Today it still represents a relatively marginal, but growing, field of studies, even when services account for an increasingly large share of employment and of the value added creation in the advanced economies. The reason for this discrepancy - between relevance of the industry and lack of innovation studies - has much to do with the traditional link between innovation and technology (Salter and Tether 2006). Services in fact do not usually produce innovative technologies themselves, but profit from applying innovative technologies developed in other fields, especially new info and communication (NICT). They are, as for technology, 'suppliers dominated', and therefore uninteresting in the traditional economic perspective of innovation, the core of which is of technological nature, and mostly object based.

Contemporary research on service innovation sees this approach as too narrow to capture the innovative core of service innovation. Experts mostly refer to a synthetic approach, based on the ***complementarities between organizational/ people based forms of innovation and technological ones***. No form of technological change is seen as necessary pre-

condition for innovation. Service innovation studies focus on explaining how various activities interrelate, looking at the role of suppliers, customers, complementary innovators, and how the added value of an innovation is distributed among them ('innovation value-added chain').
Specific to the service industry is the wide range of sectors, from traditional, mostly low-skill, services to the so-called KIS/ KIBS (Knowledge Intensive Business Services) that include professional services such as architecture. To this variety correspond an accordingly wide range of innovation patterns, from almost non-existing to highly sophisticated, knowledge intensive ones, as in the case of computer software and financial services.

Understanding the specific nature of service innovation goes beyond mere service economy. Today the boundaries between manufacturing and service activities are getting blurred: firms increasingly offer new combinations of services and manufacturing. This is seen as an attempt to 'reposition themselves on the value chain', as service firms move to include manufacturing, and manufacturing ones services, to harvest additional value (Salter and Tether 2006).

Table 4.1:
Specific features of innovation in the service industry

Continuous pattern of change	Empirical evidence has highlighted how service innovation follows a continuous pattern of change, by a series of smaller steps, as opposed to the traditional 'staircase' model of manufacturing innovation, requiring big jumps and restructuring.
Lack of intellectual property protection	Innovation know-how in services is hardly ever patentable. This is mirrored in the tendency to protect intellectual property, thus the profitability of innovation, through difficult to replicate complementary assets, such as reputation, efficient routines, branding.
Open, distributed innovation	Innovation in services often results from the successful interaction between more firms or entities or from the 'generative dance' between actors, including clients and external partners: instead of production, co-production of innovative solutions.
Relevance of soft skills	'People-based' technologies also defined as 'social technologies', such as co-operative practices, are seen as necessary ingredients for most service innovations. Organization oriented services see their 'strengths at innovation' on the skills of their work forces and in their co-operation.
Low skills equilibrium, 'locked systems' :	Services, especially traditional ones, are usually not traded, but provided on a local market. Firms remain profitable even when providing low specifications goods and services. In this situation of 'low skills equilibrium', there are both little incentives and little possibility for firms to seek and manage innovation, as they are trapped in a vicious cycle of low added value, low skills and low wages. The lack of demanding customers might be an additional factor hampering innovation, and preventing especially small firms from adopting innovative practices developed by larger ones ('locked system'). These phenomena make clear that in numerous cases market mechanisms left alone can only produce suboptimal results.
Lack of formal R&D, including insufficient connection to academic research	Research and development investments in the service industry are low and concentrated amongst relatively few firms, mostly knowledge based ones, as they invest in innovation to solve the problems for their customers. In most other cases, service firms will not have distinct R&D departments and/or undertake R&D on a continuous basis.

Source: Salter and Tether (2006)

Innovation in policy and the planning disciplines

The notion of innovation applies to political and administrative decision processes too. Political and administrative systems are in fact confronted with 'new' problems that can not be solved with usual tools (such as attractiveness for knowledge-based industries and knowledge workers, revitalization of industrial areas, sustainability, integration of migrants, etc.). Regions and cities need to develop new approaches and innovative solutions for innovation deficient sectors. The issue is particularly relevant in the current context of competitiveness among the so-called 'learning regions' and regional innovation systems, where ensuring the possibility of innovation is part of the collective survival and success strategies.

The planning disciplines represent a specific case of policy innovation, and have in the last years joined the debate on how to implement innovative solutions, and which barriers need to be confronted. Fürst and Knieling, Häußermann and Siebel, Ibert are some of the contributing authors in German speaking context, with specific focus on regional and urban planning issues. In their view innovation in the planning context follows a different logic than in manufacturing and service sector, if not in its totality at least in substantial parts.

Häußermann and Siebel formulate the question (2004) 'How can innovation be organized in non innovative contexts?' Specific features are described in the following page. and make clear that innovative planning is not 'object-related' but mostly organizational. Ibert writes:

'The innovation task changed the object of urban and regional planning- innovation oriented planning is 'immaterial' planning' (Ibert, 2003, p.36, original text in German).

It is not about the hardware of a city or a region, but about the software, and about the management of the required complex and interactive communication process.

Social innovation

The shift from an idea of value limited to profit to a wider notion of what value is also at the base of the research on social innovation. Social innovation has been defined (Phills et al 2008, p.36) as:

'a novel solution to a social problem that is more effective, efficient, sustainable or just than existing solutions and for which the value created accrues to society as a whole rather than private individuals'

The difference between social innovations and other innovations that address social problems is thus in the values chain, as only for social innovations the added value - financial and social in nature- is distributed towards society as a whole.

Table 4.2
Specific features of innovation in planning

Barriers linked to the characteristics of public actors	Planning innovation, similarly to innovation for traditional service industry, has to take into account **lock-in effects** and **risk-averse actors**. 'When the task (of innovation) is transferred to the realm of public planning, then it has to work under other conditions. These have been described through a three sided paradox: it is about planning the unplannable by untalented actors' (Ibert, 2003).
Necessity of risk reduction measures	As the innovation process within a political context and system has higher transaction costs than 'individual' innovation processes risks will need to be minimized. The reduction of risk can be achieved by introducing benchmarking practices and competition for the adjudication of subsidies (Fürst and Knieling 2002). **Benchmarking** is a management practice developed by manufacturing and other industries. It consists in comparing cases of best practices with the current process of the organization (thus assessing relative performance of the current process), establishing points of references (benchmarks) and eventually changing the current process so to achieve the competitive advantage of the best practices taken as a reference.
Innovation as learning process	Innovation in planning is about breaking existing routines, changing mentalities, creating the possibility of new approaches from within, in order to **confront open-ended questions**. In this sense planning needs to be organized as learning process, as top-down processes, possible in manufacturing or services, do not apply here.
Unfreezing- refreezing phases	In order to achieve innovation within a public administration system, or at regional level, a disruptive phase needs to be taken into account, as already highlighted by Schumpeter for other contexts. Traditional approaches and institutional status quo will be put into question, and the system will go through a necessary instability, during which the change will take place. The new set up or procedure will be then 'refrozen' in a changed institutional framework, so to guarantee the necessary certainty to the system ('unfreezing', 'refreezing', Bratzel in Fürst and Knieling, 2002, p.21).
Consensus reaching process versus innovation oriented ones	Particular efforts are needed to separate the consensus reaching process from the innovation phase. These two processes (consensus reaching, innovation) are in fact steered by opposite logics, and will in the end tend to neutralize each other. Separation in terms of phases (first the idea, then the administrative part) or in terms of institutions (separation between the ones deciding the innovation and the ones implementing it), advocacy-coalions, moderation are seen as some of the tools to achieve innovation within collective, consensual set-ups.
Role of charisma	Charisma and extra-ordinary events, such as festivals and art installations, are possible tools to break the status quo and create a starting point for innovative planning, as shown by the experiences of the IBA Emscher Park project and of the Expo 2000 in Hannover (Ibert 2003). The advantage of 'charismatic effects', such as the happening the Wall, by Christo and Jean Claude in the frame of the IBA Emscher Park project, is that they work both towards the involved actors and towards the outside of the organization as communication vehicle for the new. They also fulfil the somehow narcissist need of recognition of public administration. In this sense they open planning innovation to marketing and 'packaging' strategies (Ibert 2003, p. 88).

Social innovation is understood as an effective construct to understand and then produce lasting and beneficial social change. One of the most referred to social innovations is the creation of the Grameen bank, a community based micro-credit provider that provided financial services to the poor and disadvantaged in Pakistan. Other world changing social innovations are models of distance learning such as open university, fair trade, Greenpeace, Oxfam, Linux software (Mulgan, 2007), community-centred planning, emissions trading, individual developments accounts, socially responsible investing (Phills et al 2008). What this list shows is that social innovation not only applies to the non-profit sector of social enterprises, but is pursued as well in the realm of politics and government, education, provision of health services.

II. CONCEPTUAL FRAMEWORK

The field of research is relatively new. While some notions developed from traditional innovation research focus on technology and business can be applied, social innovation also has been recognized following own specific mechanisms, albeit the body of research appears to be still limited and there is little knowledge about how ideas move across sectorial boundaries. Yet success and change is increasingly found where sectors converge, such as the integration of private capital and set-ups with philanthropic aims and organizations (Mulgan, 2007, p.5).

The pattern of social innovation is assumed to have a much higher impact than traditional business innovation on the future of central sectors such as health education and care, where commercial providers cooperate with voluntary and public organizations and consumers co-create value. Part of the aims of the research is thus to analyse the impact of such innovations, also to move the focus of public funding from hardware and objects, such as pharmaceutical research and development, to software such as innovative services for health and care delivery.

Design-driven innovation

The shift to a more open, post-modern notion of innovation has contributed to a rethinking of how innovation works in specific manufacturing industries, not only in disciplines where the innovation was not profit driven. One of the outcomes of this rethinking is the notion of design-driven innovation, developed by the Italian management researcher Roberto Verganti. By investigating the set-up of Italian design-intensive manufacturers, he concluded that a central role in an innovation can be played by the meaning that design gives to the product, and not necessarily by technology or functionality. This is not a new phenomenon, however it is a phenomenon that has received little attention. In his understanding, the appeal of innovative products to people works in two dimensions: the utilitarian dimension (about the way the product function, thus including the technological aspects) and a second dimension concerning the sense and meaning of the product, the 'why' of it, ' the profound psychological and cultural reasons why people use the product' (Verganti 2009, p. 32).

In his view radical product innovations are often innovations that radically ***change the meaning of the product,*** and they do this by relying on design, as it is through design that the meaning and language of a product can be manipulated and changed. One of the main differences of Verganti's perspective on design-driven innovation from other perspectives on innovation is that it hardly starts from existing users' needs and behaviour, but instead it makes 'proposals', putting forward a vision about new meanings. In this set-up, the role of the designer is central, as he acts as the 'interpreter'. Through his interpretation he produces a novel meaning and envisions a new context of life. His reference is a wider perspective on the changes in society, culture and technology, what Verganti defines the 'design discourse', an informal diffused research process shared by other parties interested in the meaning of things, such as architects, suppliers of raw materials, editors of magazines and other media, universities and design schools, hotel and exhibition designers, consultants in the sociology and anthropology of consumption (p.118). It

is therefore a set-up very different from traditional 'user-led', technology based innovation, that refers to existing meanings and languages, and relies on instruments such as marketing research and users analysis.

One of the benefits of design-driven innovation is that it can generate long-lived product, because of its meaningfulness. The analysis of the life-cycles of products such as the Italian car Panda shows that their acceptance may start slowly compared to other more standard products, but while the others become obsolete, the product 'keeps attracting users because it is more meaningful to them, regardless of functionality and style' (p.105).

While Verganti's focus is on management of manufacturers, his insights concerning the positive influence of innovative design in a product life-cycle and value of a product apply eventually also to architecture.

Innovation and architects: a question left aside

Each of the perspectives above (innovation in manufacturing, innovation in services, innovation in planning, innovation in design-based products) relates in some way to architecture. Architecture in the sense of what architects provide is a 'knowledge based service', offering bespoke solutions to client needs. Architecture understood as building production refers simultaneously to manufacturing processes and to institutional frameworks, and therefore to both product innovations and policy/planning ones. Architecture as design refers to the field of design-driven innovation and finally because of the social dimension of architecture the notion of social innovation plays as well a role.

Relevant contemporary studies from within the field of innovation refer to architecture only peripherally when looking at the design contribution to innovation within the construction industry. Work by Salter, Gann and others has dealt with the issue of how to measure design performance in the construction industry in order to assess innovative contribution. Their choice has been to concentrate on an engineering firm - Ove Arup and partners - as in their view the 'heart' of the service provided is the consulting engineering sector, and not architecture (Torbett et al 2001, Salter and Gann, 2001). Even a more recent analysis of innovation in construction service sector does not consider the role of architecture in construction in general or home delivery in specific (Bröchner 2010).

Yet from within the discipline, innovation is an essential aspect of the architecture practice. The usual self-understanding is that architecture design is about creating something new, and not about mere replication. Innovation is consequently a recurrent theme in the architecture debate, yet it remains paradoxically implicit, and/or based on not clearly defined categories. An explicit/systematic exploration of the What, How, For/by whom of innovation in architecture is missing.

II. CONCEPTUAL FRAMEWORK

The results of innovation studies, even when relevant for the architecture discipline and practice (see the examples quoted above) are rarely referred to. What is available is a collection of fragments, much focusing in on the role of new technologies, and with few helpful distinctions about the kind of innovation and the locus of innovation[2]. While business administration students are taught the soft skills necessary to implement innovation in terms of process management, architecture students are taught to provide innovative design, and to implement it exclusively in terms of constructive/technical details.

The reason for the lack of a structured approach from within is not easy to pinpoint, as the field remains mostly unexplored. It might have to do with two recurrent misunderstandings, one being the confusion between the notion of innovation and that of invention, the other the tendency common among architects to focus on the final product independently from the processes behind its realization and use. Architects tend to use the word innovation when referring to what in a broader perspective are inventions: one-off creative responses, far off from becoming the standard situation/ product, and representing the tip of the iceberg of architecture production. The observation field is basically circumscribed to the expert world of architecture, and not to the overall production. In the perspective of the previous pages, architects, as suggested by Verganti for designers, position themselves in the role of 'interpreters' of what society might need and be interested in. Yet, buildings are only in part comparable with design products. They differ in terms of production (buildings are mostly one-off situation, and not manufactured in series), costs (buildings are expensive), legal set-ups, reversibility, and so on. The consequence: architects are left out of touch with the main reality of what is being built- what economists call 'dominant design'- as they concentrate on high-end products. It is like trying to understand how people dress by looking exclusively at haute couture design, leaving out the whole production of H&M, Benetton, Pinkie, Zara, the various postal sales catalogues and other cheap no name products.

Architects tend as well to circumscribe the idea of innovation to design, the traditional field of action of the architect, and do not consider the broader process. It suffices to look at photographic rendition of buildings in magazines: projects are presented in as empty spaces, with little information on what were the pre-conditions that made the project possible, and how does the use really work. Still, innovation and change have a lot to do with how the 'preconditions' for the product were set (definition of the program, kind of subsidies, possibility of exceptions from normative framework, etc.), how the actors interrelated between each other, and how the adoption and use of the product by the final users has been made to work . And, in the case of innovative products, with how and when the added value has been distributed among all the involved parties.

As phases relevant for the overall success or failure of the implementation, such as users' response to the new product, are not taken into consideration and the focus remains on the original invention, the understanding of innovative products will necessarily be severely limited and unable to move beyond the specialized architecture discourse.

2. See for example the paper f*ocus: Architecture. Analysis and Stimulus* published by departure- The Creative Agency of the City of Vienna (Temel and Dögl 2008). The paper specifies the guidelines for innovation funding in the field of architecture. Criteria considered implicitly refer to two possible dimensions of innovation in architecture: innovation about the business model of service provision (see service-based innovation), and innovation concerning the actual design (technological and design-driven innovation). The criteria considered are: create value in building through redefined architectural competences, increase the role of the users and create new set-ups among planners, developers and users, support communication processes and networking, distribution, know-how transfer, technological innovations in the field of sustainability, service provision and process, and projects where architecture is a mean to support corporate identity.

The examined notions of innovation provide a possible starting point for a more comprehensive understanding of innovation in architecture (see graphic in the following page). From what examined until now, it appears that an 'object-based' approach will be too narrow, thus one will need to consider people-based, 'soft' approaches, as already done by the services and policy innovation studies, and to incorporate many tools and theories outside traditional innovation studies, such as organizational behaviour, users response, role of soft-skills. Innovation policy issues will have to be taken into account, especially because the private sector alone does not have neither the interest nor the power to question the validity of the existing product description, and operates mostly on the basis of existing know-how.

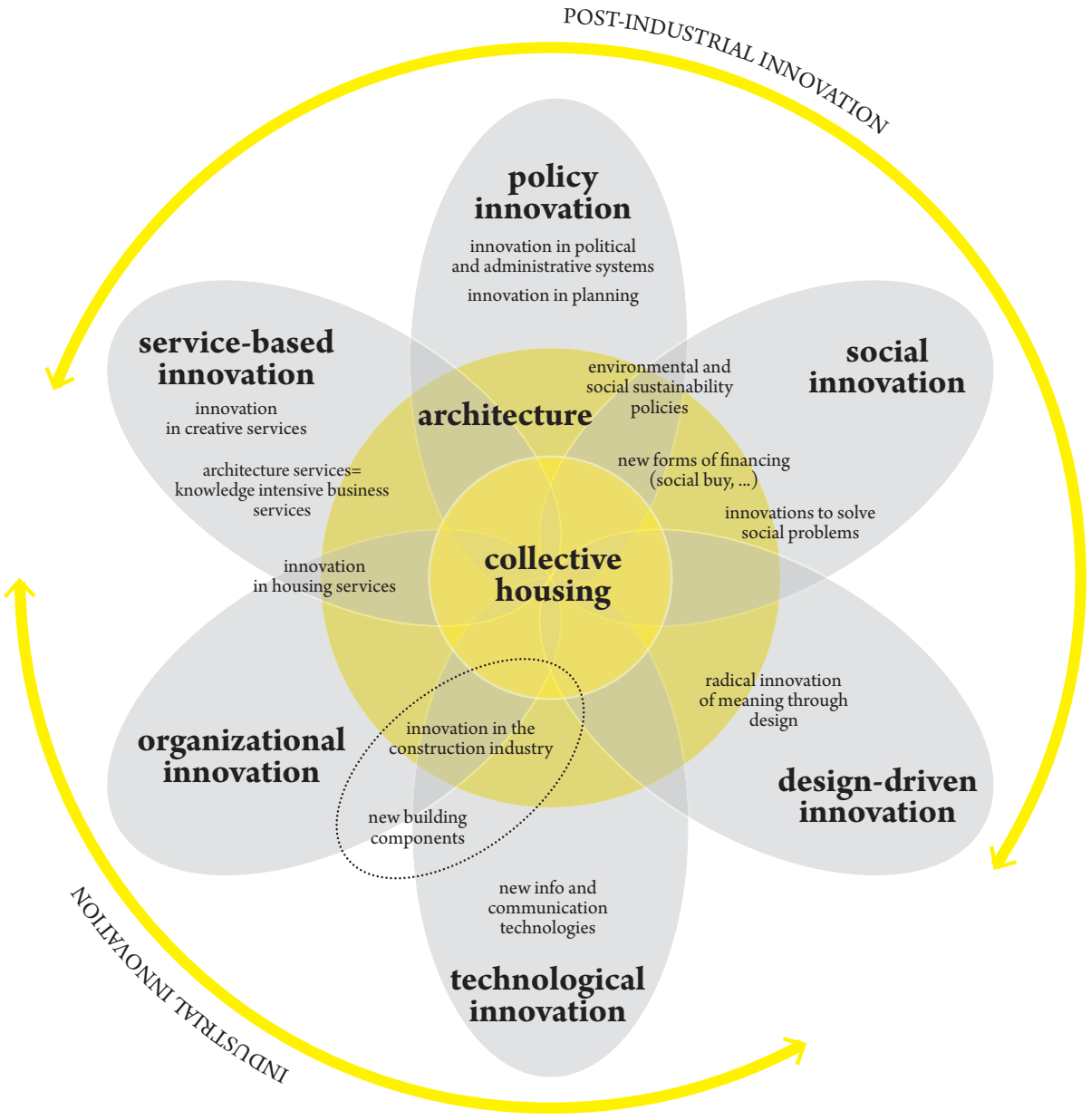
A structured approach to innovation in architecture could offer a relevant contribution to move out of the 'low skill equilibrium' characteristic of much of the construction industry production; it is however well beyond the frame of this work. The focus of this work has been restricted to collective housing. This might on the other hand represent a piece of the puzzle, and provide useful insights for a possible broader picture.

While presenting my intentions for this work, I was confronted with the following example: 'Let's say I make a really strange rooftop apartment, and it is really odd, with the bathroom right in the middle of the living room, and no walls, etc., and I manage to sell it to this one guy. He buys it, and lives there happily, like I have lived there happily. Is this innovation or not? It is a really weird apartment. Is it enough to have two weird apartments? Who judges where is innovation rather than a really idiotic client? If I manage to convince this guy to buy it, is this then a clue that this was innovation, or not just a mistake?' (Kari Jormakka, 2004 , PhD methodology seminar May 2004).

The example proposed touches two basic issues: innovation as creation of value and how we define the subjective dimension of innovation, that is to say how we answer the question 'new for whom': New is not better, but innovative is. So the really weird apartment, even if different from the rest, should not be defined as 'innovative', unless we are able to define the 'added value' of our change. New for whom? Is the realization of one 'different' building enough change to allow the label of 'innovation'? After all it has moved from the conception to realization, people will be living in it and other architects will be referring to it when producing new designs! Still, the answer is no. Innovation is about diffusion and changing/offering a viable alternative to the dominant design, therefore one or two apartments are not really relevant, but if not a whole branch, at least a market niche needs to be redefined thanks to the new product. Even if the innovative character of a certain product might be a matter of expertise, yet what the disciplinary discourse on innovation makes clear is that **only when a new product moves beyond the expert world and reaches the users of a certain branch or system we can talk about innovation**. It is on these patterns of change and diffusion that innovation studies communities concentrate their focus.

Fig. 4.2
Innovation in architecture and collective housing

A possible definition of innovation in architecture depends on the selected perspective. The diagram shows how relevant notions of innovations from other sectors can support a definition within the architecture field. Depending on the perspective, we can refer either to traditional industrial manufacturing perspectives, for technological innovations and industry organization aimed at profit, and to post-industrial notions of innovations, where technology is not so relevant and the added value is also about achieving benefits of a different kind and possibly also tilted towards society as a whole. The dashed line indicates the usual understanding of the field architecture innovation, between technology and building industry organization.



5. WHY CHANGE: OPEN CHALLENGES FOR COLLECTIVE HOUSING

The previous chapters have argued that architects strongly believe in the need to produce better collective housing, and that existing studies on innovation can provide an important reference for this change. But is the call for change and innovation by architects relevant beyond their specific perspective?

Housing is a multilayered concept, including both the physical product and the process of its provision and use. The question of what better housing is and how to provide it goes beyond the characteristics of the architectural products, and - once we accept the broader notion of post-modern innovation - it involves at least political and sociological disciplines. To identify sources of innovation for collective housing, a multidisciplinary perspective makes sense. Out of this broader perspective, a series of open challenges for contemporary collective housing emerge. In the following pages they have been grouped according to three main issues:
a) the implications of the increasingly privatized housing provision,
b) the increasing differentiation of households and users, both in quantitative and qualitative terms, and the consequent need to move beyond modern standard approaches,
c) the essential role of typological sustainability in a contemporary perspective in favour of compact urban development.
In the perspective of this work it is the need to respond to these open challenges that constitute the main source for collective housing innovation.

The changed role and objectives of public intervention

Collective housing has traditionally been the selected mode of provision of public housing. Today an increasingly blurred divide between public and private housing provision can be noted in Europe. Differently from before, since the end of the 1990s few European housing policies state the centrality of direct state interventions and of direct provision of social housing (Maclennan et al, 1996,p. ii). The regulating role of the public hand is seen in forms of indirect control, such as subsidies directed either to the demand (subject subsidies) or to the supply side (object subsidies, in this case indirect ones), while the role of market provision, even if subsidized, has strongly increased.

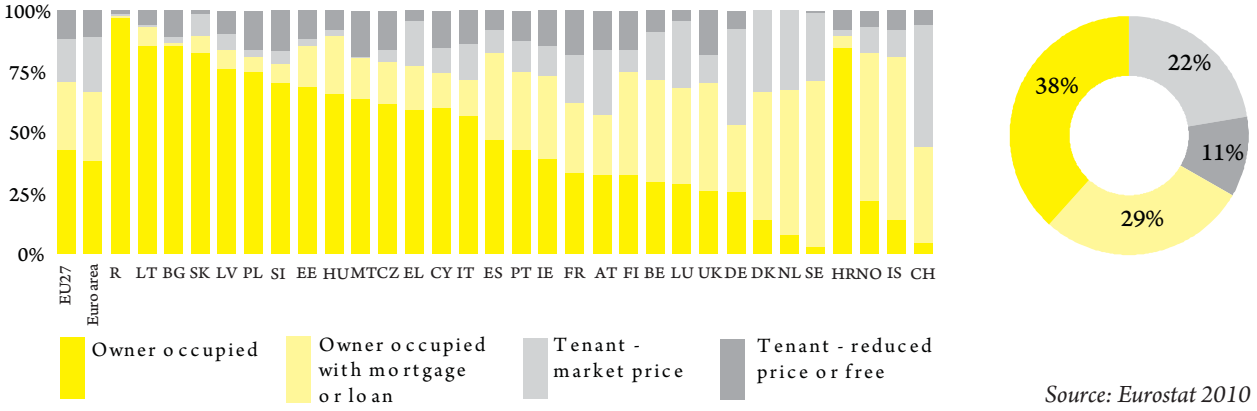
In Mediterranean countries social policies mainly supported owner-occupation with subject subsidies, foregoing the creation of a relevant social housing sector. What is new is that these subsidies have become the main approach also for countries that traditionally relied on direct provision, such as United Kingdom. Indirect object subsidies have been as well developed in many countries, where both private/commercial and privatized non-profit actors qualify for these subsidies. As a result, private actors have taken over the role of what used to be the public housing sector. They are of course doing this following different criteria than public housing providers.
The shift from public to private in the housing sector works at another level as well. In most hous-

ing policies in Europe there is by now a very clear focus on ownership-occupation (Priemus et al, 2002, 193). ***In 2009 nearly three quarters of the EU-27 population (73.6%) lived in owner-occupied dwellings*** (Rybkowska et al, 2011). Also in countries where the social housing systems traditionally relied on a large social rental sector ownership occupation has been strongly subsidized. In United Kingdom, for example, a 'Right to Buy' was introduced for council housing tenants in 1980 with the result that owner occupation from 1980 to 2003 rose from 58% to 69% of the total dwelling stock (Housing statistics in the European Union, 2004). In other countries, even if no direct transfer has taken place, the social rented sector shrunk because of lack of intervention for this kind of housing (Priemus et al, 2001, 193). Low interest rates have also contributed to the raise of home-ownership. The highest rate of owner-occupation in Europe (up to 90%) is in many ex-Communist countries within the European Union, with the exception of Poland and Latvia. Flats were sold to tenants at very low prices with the switch to market-based economy. This has resulted in virtually eliminating the social housing sector in these countries. Germany is the only country in the EU-27 where the rental sector is today larger than the owner-occupied sector.

The move from a rental sector for low-income households to subsided ownership also open to middle-income ones was also an ideological shift (Maclennan 1996). Collective housing production today has a particular focus on middle class sector and ownership. The shift from public to private opens up the very basic question of what are the aims of state intervention, and how public resources should be efficiently used.

If state intervention in the housing sector had to do with maintaining social equilibrium, today this is only one of the aims. There is an increased attention about how housing influences attractiveness as well the level of competitiveness of a city and/ or connected region. Housing influences population, by effecting for example location choices, growth and job create on potential

Fig. 5.1
Tenure split per country and in the Euro area as percentage of the total housing stock



Source: Eurostat 2010

(Mulder, 2010), or the competitiveness of a region, by steering the level of social segregation (Czinschke 2006). Attractive housing might prevent out-migration, and attract migration, as not only people follow jobs, but also jobs follow people. Housing is furthermore one of the factors influencing industry locations choices. Certain combinations of housing qualities and accessibility have an effect on levels of fertility, by influencing the time of household formations and thus the age at which women have children.

The European Parliament resolution on housing and regional policy of 2006 stated that 'housing should also be seen from the wider perspective of the attractiveness of cities in terms of strengthening their growth and job creation potential' (Explanatory statement, European Parliament resolution on housing and regional policy 2006/2108-INI). It is at the local level that this shift has implication. Cities need today to directly develop strategies to respond to demographic changes and put in place different measures to 'attract certain population groups by providing financial benefits, for example affordable flats or tax reductions for skilled workers from abroad, and the provision of services or appropriate urban design' (European Environment Agency, 2009, p.32). Examples include strategies in Eastern Germany to react to the shrinking population, but as well new planning such as the Amsterdam case study and, more recently, the development of Aspern in Vienna Austria or North West Cambridge in UK.

The shift in the perspective of state intervention opens up a series of challenges for housing production. A first central question is how to and who should cater for the ***long term attractiveness*** , as housing for sale follows a short term market logic of being attractive for potential buyers in the moment it goes on the market and does not need to cater for the longer term performance .

Secondly, how certain qualities relate to certain users' expectations has become relevant not only for private developers, but also for cities and administrations who need to (mostly indirectly) steer housing production as to help sustaining their ***performance and competitiveness*** on the short and long term. How can state intervention cater for it in the moment in which is giving more and more control to private actors?

A third set of challenges are related to the side effects of reducing availability of ***rental affordable housing***. These include the increase in the percentage of low-income households in what remains of the social housing sectors (Priemus et al, 2002, p.195) and increased needs for residential mobility linked to workplace mobility. Because of the high transaction costs, house-owners, at least in North America and Western Europe, are less likely to move to a different place because of job opportunities (transaction costs are much higher for home-owner than for tenants). The question is both who will produce affordable housing and which models are available.

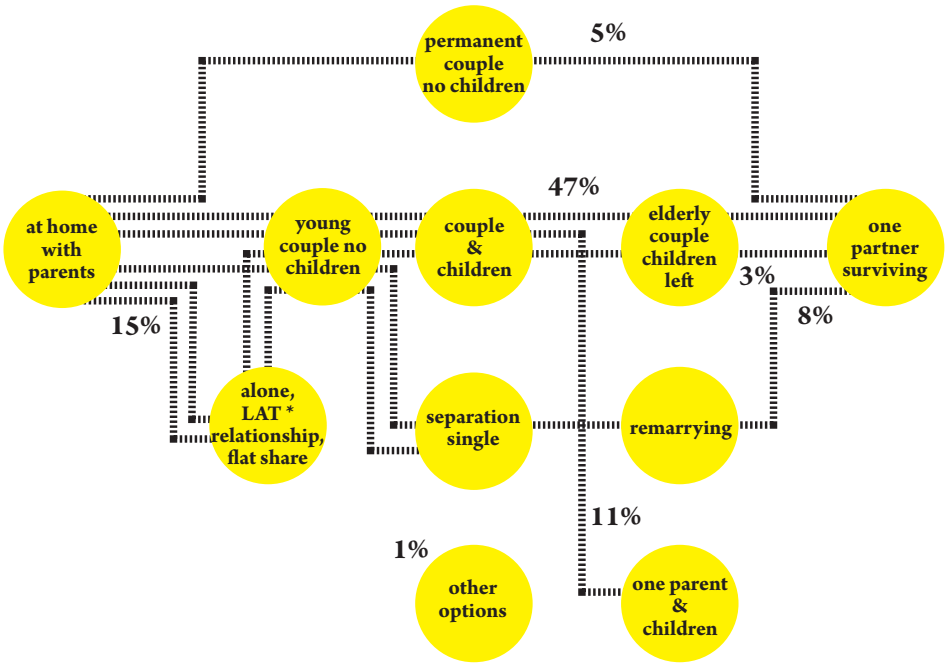
Beyond the standardization of the users

Specific to collective housing is the user/designer gap in the production. While for single-family housing the architect is in direct contact with the client-developer, collective housing is a market product, where the users' needs, expectations and in the end willingness to pay a certain price for certain qualities needs to be assumed in advance.

Standard biographies and household types were at the base for the Modern model of collective housing and were mirrored in the standardization of the dwelling, in terms of number of rooms or/and layout, dimensioned on the basis of minimal acceptable spaces and functions. This belief in a 'formula for living that is successfully integrated into order and scientific progress' is still one of the most embedded clichés of the contemporary architectural approach to housing (Abalos 2001, p.71). The reduction of individual needs and expectations into a series of predefined, statistical parameters and standards behaviours, however helpful and embedded in the planning process, represents today a strong limit in the capacity of architects of producing adequate domestic space. To linearly connect these predetermined parameters with objective needs of contemporary users has become less and less possible.

Fig. 5.2
New biographies

From the basis of data provided by the Dutch statistics (1997) it was possible to look at possible life biographies in the Netherlands. The image below- extrapolated from the statistical data- describes biography types in terms of household settings experienced, with each station representing a specific constellation in terms of basic housing needs. The main line corresponds to standard biographies, starting from the parents' home and ending as surviving partner after having lived as a couple with children that have a certain point left home. Yet 53% of the Dutch population had at the time of this inquiry a different 'run through life', with for example 39% not having children at all, or 26% experiencing being a single households already in the early stages. Source: Doermann, and Forlati 1998
** LAT stands for Living Apart Together, and refers to couples who have an intimate relationship but live at separate addresses*



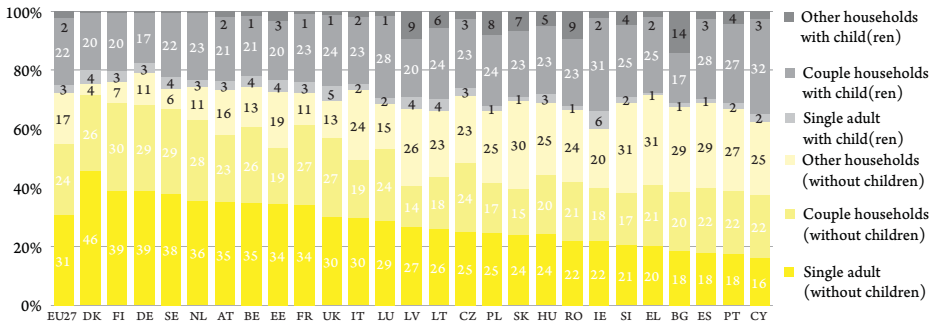
Today there is no fix link between the number of people living in a dwelling and a given household structure, making the ideally required number of sleeping rooms an open question. Similarly, it is not possible to clearly limit life and work functions both in terms of time and space, as it propagated by the industrial way of production. Housing has once again become a multifunctional space, bridging the strong divide between living, working and free-time at the base of the Modern model.

What has changed in terms of housing parameters can be linked to wider trends in society. Both hard quantifiable factors and soft ones are considered by the various disciplines involved (sociology, housing economics, planning, architecture). The first look at demographic changes that are influencing the composition of our contemporary European society. The latter relate to a major shift in the kind of expectations linked to domestic space, but are not statistically quantifiable.

»Quantititative perspective

Statisticians point out that within the EU the pattern of population has considerably varied in recent decades. This change has to do with migration, and with the development of age and household structures of the European population. Migration represents since 1992 the most significant component for population growth in Europe. It either compensates the overall decline in population as it is the case in Germany, or significantly contributes to the natural growth as in Netherlands, Sweden, or United Kingdom, or is the main motor behind the growth as in Austria, (Eurostat, 2011). Europeans are not only changing in terms of cultural and ethnic background, but also in terms of age distribution and biographies. The raise in number of elderly people (the so called aging society) and changing household structures both in terms of size and type, with a very relevant raise in the number of one person households (demographic restructuring) are the most studied phenomena. They are interconnected and contribute to changing 'hard' housing needs in Europe as a whole - even in front of differences among the various EU national contexts.

Fig, 5.3
Household types in the European Union (%) 2008



Source: Eurostat 2010

II. CONCEPTUAL FRAMEWORK

In Europe today there is an unprecedented number of elderly people, and their number is projected further raise. ***By 2060 29.5% of the EU27's population is expected to be over 65 years old, compared to 17,4% of 2010*** (Eurostat 2012 p.112), resulting in an unprecedented number of elderly people living alone, especially in cities. The decrease in household sizes in Europe is combined with the raise in the number of households. This trend has raised demand for housing, both in terms of number of dwellings and the amount of required square meters. Bigger households reduce in fact the amount of necessary dwelling surface per person, as certain spaces – such as a kitchens, bathrooms, living rooms - are shared among several household members.

The multiple possibilities of linking household sizes and household structures questions one of the basic approaches of the Modern movement, as standard approaches to dimensions and hierarchies of the spaces in a dwelling of a given size do not work anymore.

» ***Qualitative perspective***

Quantitative perspectives, however, provide only one side of the explanation why today the Modern approach to housing standards is increasingly questionable, and possibly has come to a dead end. In the shift from the first to the second modernity, from an industrial based to a service based mode of production, phenomena such as reflexivity and individualization contribute directly and indirectly to a qualitative and 'soft' redefinition of the housing parameters, possibly more radically than the quantitative phenomena described above. In looking at how these new phenomena influence the attitude of people towards their life-choices, sociologists are opening the discussion about the role that housing plays in defining identity in the contemporary society.

The sociologist Ulrich Beck in his theory of the risk society (1995) describes how the decline of three specific structures -class society, classic nuclear family and mass industrial production- has lead to the process of individualization. In his understanding in contemporary western societies it is up to the individual to organise and decide what before was predefined by the fact of belonging to a given class and family. Individuals have to set up their own choice biography, carrying the connected risks and duties in a continuous process of trial and error (Beck 1995, p.191).

The freedom from the collective identities and structure of the industrial societies has a multiplier effects on the number of possible lifestyles and identities. Individuals have the possibility to reflect on what they chose and what they are about (self reflexivity). This can also be seen as a new and positive space for individuals in front of the increasing complexities of the contemporary society.

The sociologists Lash and Urry, differently from Beck, particularly stress the aesthetic dimension of contemporary reflexivity. In their understanding, social processes in late modernity are characterized by specific forms of ***aesthetic reflexivity*** and the spread of aesthetic cultural capital

(founded on allegory and symbol) as source of the self in everyday life to wider groups of people. They point out the existence of aesthetic life goods: goods connected to the culture industry , such as travel, tourism, but as well spaces such as hotels, restaurants, arts galleries, airports, where the component of design is increasingly coded, and whose consumption involve an important set of identity- choices. They also note that this kind of consumption is typical for the middle class (Lash and Urry, 1996, p.32-59).

For part of the middle class of advanced societies, housing- or at least domestic space- seems to have become one of these aesthetic life-goods. This assumption is in line with the finding of the British Mass observation archive (Clarke 2008 and 2009). In the 40s the nature of what the working class wished was based on 'simple desires', strongly connected to functionality, such as a place for the piano, heating for the bedroom, or having one's front home. Asked about what their 'home of their dreams' looked like in 1943, the respondents did not know what to answer. Today 80% of the respondents know what their ideal home looks like. The images of these ideal homes are externally generated, being taken from Internet. Clarke suggests that there are 'new ways in which individual and family biographies become integrally tied not just to objects (..) but to specific constellations of interior design'. What Clarke registers is new set of aspirations that make of domestic space and its consumption an increasingly complex product, linked to individualized and reflexive biographies and not any more reducible to one for all standards.

Housing should hence respond to diverse aspirations and biographies. The issue is present in the architectural discourse. Yet, as discussed in chapter 1, the proposed architectural solutions have had only marginal effects. Most of the housing production remains linked to modern minimized standards for predefined functions, and lacks the potential to adapt to changes. The challenge is to understand which adaptability/flexibility/ excess capacity makes sense and how can this be embedded in the production.

Typological sustainability

The year 2007 represented a global turning point year- at least in theory - as the 50% earmark in terms of urban population was reached. Urban population growth is not a new phenomenon. What is new is the rate at which this has been happening in the last 60 years. In face of a doubling of the world population, more than half has been happening in cities. It has taken only 30 years for the world urban population to rise from 40% to 50% of the total population (Indovina 2004, p.166). In Europe, North America and Australia, this percentage of urban population is estimated to be 75% (Folch 2004, p.211). In Europe, even in front of non significant population growth, a significant increase in urban growth has been registered. Today more than a quarter of EU territory is directly affected by urban land use and the data indicates a further ongoing tendency to urban sprawl (European Environment Agency 2011).
Under these circumstances, the planning of a sustainable urban environment has become a pri-

ority. Strong associations between sustainability and compact form of urban development can be quite logically made at many levels. Compactness of the urban environment allows raising the efficiency of urban transportation and reduces land use. The link between compactness and sustainability works further at building level, as economies of scale are relevant for what concerns energy saving. For what concerns residential use, compactness can only be achieved through forms of medium and high density collective housing, where elements and/ or spaces serve simultaneously more dwellings. Compactness saves construction costs (one of the main aim of the initial modern model), but as well reduces energy consumption for heating and/or cooling. It has been calculated that a block of 8 flats compared to 8 single family houses requires ***66% less land, 32% less heating energy and 42% less construction costs*** (Gauzin-Mueller 2002, p.42).

Residential density and with it collective housing is consequently part of the sustainability agenda, as it is a key to control the compactness of the urban environment as a whole. Yet building densely does not automatically guarantee achieving sustainability. Some considerations need to be added. The connected trade offs, such as loss of social sustainability (Bramley et al, 2008) or loss of green space (Smith et all, 2009) need to be acceptable. But most of all, to achieve sustainability, residential buildings need to achieve a reasonable life-span. This is one of the perspectives proposed in the 3rd European Housing Ministers conference on sustainable housing that took place in Genval (Belgium) in 2002. Here sustainability was defined from the point of view of construction, socio-economic factors and eco-efficiency. Within the construction perspective, adaptability - defined as 'the possibility of accommodating the needs of successive occupiers or occupational users within the same accommodation, as well as accommodating the changing needs of the same occupant in the same occupation'- was selected as one of the two fundamental criteria guaranteeing sustainability.

This idea of sustainability beyond technology, and anchored instead in the robustness of the dwelling and building, in short ***'typological sustainability'***, represents an important challenge for collective housing. Components and devices of technological in nature are reversible and relatively easy to change and update. Their performance is often linked to easy to monetize benefits, such as the saving connected to the use of solar panels. Therefore the rationale for producing and investing in 'technological sustainability' is quite clear in terms of cost-benefit for both the entrepreneur and the user. The spatial hardware, which includes the organization of the singular dwellings, their sizes, the way these dwellings are linked together, the presence of additional spaces, on the other hand, is a given, once the building stands. Changing it ex-post is costly, if not impossible. Changing it ex-ante, is also difficult, as the cost-benefit ratio of a 'different', 'innovative' floorplan remains much more difficult to define, while being often irreversible.

The typological dimension of sustainability - differently from the technological one - is much more elusive, as it is linked to non quantifiable performances, such as level of adaptability or attractiveness over time. Achieving typological sustainability is hence a difficult exercise, as there are no universally acceptable rules about how to measure its performance, and thus about how to achieve it.

The normative set-up that accompanies the collective housing production (minimum standard requirements, fire regulations, subsidies regulations, etc.) as well as the extreme tight financial margins in all contexts of reference are relevant factors pushing for the maintenance of the status quo. The difficulty however is not only on the production side, but involves as well the lack of demand on the users' side, as discussed in the chapters 7 and 8. Achieving long term performance is a difficult but fundamental challenge beyond architects that calls for specific innovative approaches in collective housing. What discussed in this chapter makes clear that a general change in the nature of collective housing is taking place in the contemporary European society and beyond. ***From being a necessary, minimal, rented/public kind of housing has become a more complex good, linked to a completely different set of aspirations of its users and a different political vision of the role it plays in society***.

Contradictions are at hand, the main of these being the question of how long term interests, such as typological sustainability, can be catered for once the actors directly in charge of housing production are increasingly following market logic. These contradictions are eventually reflected in the differing calls for innovation in collective housing done by a spectrum of actors, whose interests need nonetheless to be aligned because both logics (private and public interest) needs to be catered for.

At one end of the spectrum are actors interested in pitching their product, such as private developers. For them innovation represents a way to reach specific customers and market niches. Their question is: how can innovation raise profit? At the other end are actors (mostly public bodies) interested in innovation in order to raise performance (provide better housing), and manage both positive and negative spill-overs (long term attractiveness or not of a certain neighbourhood thanks to new housing typologies). Their question is: how can innovation help increase performance (not only individual performance of the unit, but of the building/ neighbourhood, city, etc. as a whole)?

This results in very different views about the necessity and aims of innovative housing. It is therefore essential to move from a one for all notion of innovation to a differentiated one, that can account for the possible types of housing innovation (chapter 6), the relation between innovation and value in relation to the various actors (chapter 7) and how these differentiated notions of innovation and value are reflected in the way users are open to it or not (chapter 8).

6. INNOVATION IN COLLECTIVE HOUSING

Collective housing (and office spaces), differently from museums, hospitals, theatres, is a 'good' in the economic sense of term. Market logic, commercial short-term profit, product standardisation, etc., play a determining role. Consequently, the notions developed by innovation economy for manufacturing processes and for industrial products apply here more directly and effectively than for other building typologies. Yet, the complexity of interests that have to do with housing, and in particular the mix of public/collective and private ones, suggest that the linear, technology-based idea proposed by Schumpeter is not sufficient to fully approach the field of innovation in collective housing. He envisioned a linear system, where technological development of a given product was followed by process development, the whole being part of the ongoing progress of society. Housing has not really to do with pure profit mechanisms. Neither are issues such as monopoly usually relevant. The model does not offer a real explanation why process innovation such as large scale prefabrication has failed (see table 6.1).

Table 6.1
Schumpeter's innovation categories for modern and contemporary collective housing

Industrial production	Collective housing 1930-1950	Contemporary collective housing
Product innovation	Rationalist housing	Small steps - 'Soft' qualities - Sustainable housing - Live/ work - Theme housing
Process innovation	Large scale prefabrication attempt	Small steps (though prefabrication still seen as a pursuable option)
Marketing and distribution	-not applicable, no free market	Theme housing
New raw materials	Concrete and glass	-not applicable
New organization of the industry (for example monopoly)	Creation of public housing/ non- profit housing corporations / Subsidies	Public-private partnerships Indirect public subsidies

Innovation in contemporary housing is limited and there is no big- bang.

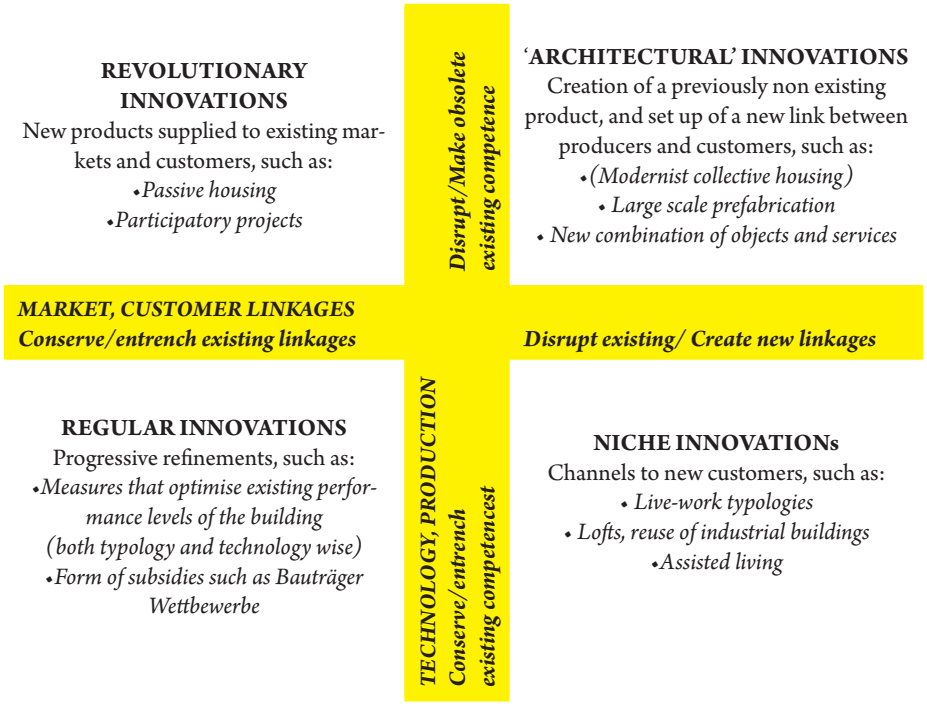
Radical versus incremental innovation

Innovation in collective housing happens, if it happens at all, in small steps, and on the basis of the existing set-up. Is this a confirmation of the housing sector being innovationless? Economists have introduced the distinction radical versus incremental innovation. This dichotomy refers to the degree of innovation contained in certain changes, and presupposes that there are substantial differences between the two kinds of innovations in terms of impact on the existing set up and response they require from the management and the users, thus they should be considered separately.

This dichotomy applies to the internal dimension of the organization introducing the innovation (knowledge, resources): incremental innovation is 'competence enhancing', as it is based on the existing set-up, while radical innovation is 'competence destroying', as it requires a totally new set-up. It also applies to the external dimension (the market itself, including the users): incremental innovation does not annihilate the competitiveness of other products on the market, while radical innovation make existing products obsolete and non-competitive, while challenging existing users' expectations and needs. These two dimensions can, but do not necessarily have to, coincide with each other. Innovations radical in terms of change required in the producing organization might be only incremental for what concerns the final users and the market they represent (see for example the electric car). On the other hand a different keyboard can be produced with little change to the existing production processes, but requires a radical response from the market and the users. In the technology perspective, ***radical innovation combines both high technical and market uncertaintanties*** and represents therefore a high risk for all involved parties, being these the first producers, the first consumers or both.

The considerations above have been synthesized in the transilience map at the base of table 6.2 by Abernathy and Clark (1985). Developed to describe technology based innovations in the automotive industry, this model has been as well applied to other kind of contexts such as the tourism industry (Hjaleger 2002). The term transilience is combination of the words transient and resilience, and it describes the effects of innovation on a certain industry.

Fig. 6. 2
Transilience mapping applied to collective housing



Based on Abernathy and Clark 1985 p.8

The map is organized along two directions: the horizontal direction represents the impact (conserve/ disrupt) on the linkages to the market and customers, the vertical direction the impact at the technological and manufacturing leve and know how. The power of this model is to capture the different combinations of know-how changes and changes required in the market. According to this model, a new housing product such as the self build housing based on standard components proposed in the Case Study #4 (Shelf housing, Hamburg) can be considered an **'architectural'[1] innovation**, as it involves not only a reorganization of the industry and of the competences, but also a redefinition of how the market works. **Regular innovations** are at the other end of the spectrum, as they are incremental in nature and do not require changes in the existing set- ups and knowledge. Most of the so-called innovative housing design tend to fall into this category. **Niche innovation**s open up new markets and might challenge existing linkages, yet they do not require new competences or technologies. Assisted living falls into this category, as it is a new product but does not challenge the existing know-how and competences in the building production. **Revolutionary innovations**, on the other hand, happen within an existing set-up, yet they require a radical change in the way product reaches the market. For example, participatory projects require architects to be able to moderate a much more complex process where the users are directly involved and have a say on the design. The limit of this map is that it is embedded in the production perspectives. While it provides useful insights on the range of impacts innovation might have, users' needs and reactions to innovation remain implicit.

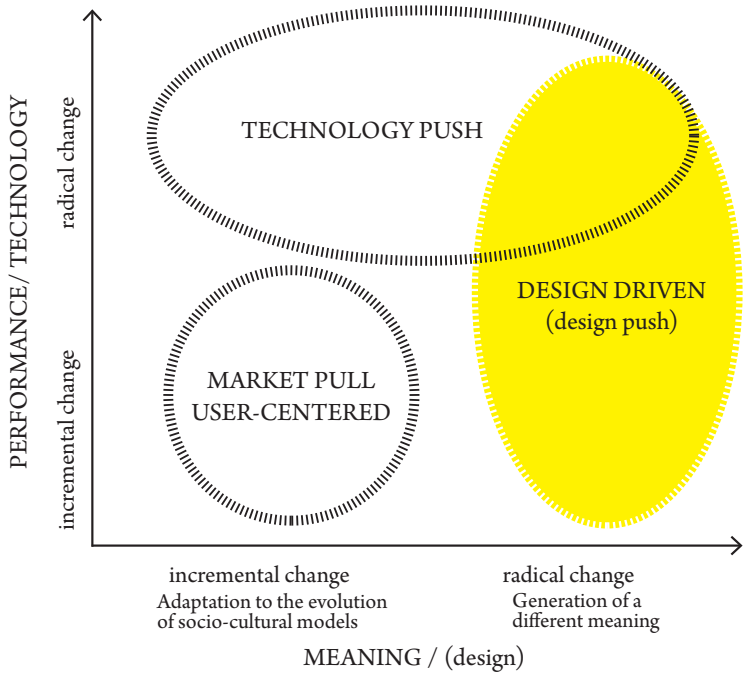
1 Abernathy uses the term 'architectural' to indicate innovations that changes the basic configurations of products and processe, and not in the sense of pertaining to the architecture discipline.

The meaning/performance innovation model

The more recent model of design/performance innovation helps to explain and categorize innovation in collective housing including a users' perspective. This model was developed by the Italian researcher Verganti (2009) in the frame of his analysis of design-driven innovations already discussed in chapter 2. As other models (Pearson, Hamel, among others) it starts by identifying two fundamental innovation dimension Each of these dimensions is mapped on the basis of the incremental – radical dichotomy and the resulting four sectors in the diagram map the possible combinations. On the basis of these dimensions it is possible to differentiate the various innovations or the development stages of one same innovation, and consequently their impact and mechanisms.

In his map, Verganti defines innovation in products as a combination of changes in the meaning and languages (on the x axis) and performance and technology (on the y axis). User-centred innovation happens out of incremental adaptations to the evolution of socio-cultural models and of incremental performance improvements. It is thus an innovation defined by the market and that starts from the needs of the users. Adaptation to existing socio-cultural model can also be radical in nature when a new application is defined by the 'push' of new technological developments. These innovations are the usual focus of innovation economics. But (and here lies Verganti's original contribution) radical innovation, thus an innovation that moves 'outside the spectrum of possibilities of what people knew and did' (p.52) happens as well through design, as

Fig. 6. 2
Design-driven innovation



Source: Verganti 2009 p.45

it is design that steers the meaning and language of the product, its interface with the users, its appeal to them. What a product means goes beyond its technology and functionality, even if it is often deeply entangled with it. A bookshelf that because of its design becomes a painting that carries books (Bookworm by Kartell), a lamp that becomes an atmosphere maker (Metamorfosi by Artemide) are products that work also because of their symbolic, emotional and identity-providing value (p.28). What these examples also make clear is that radical design-driven innovation is not about design for design sake, but is about cases where through design a product generates a different meaning / a different 'why.'

By recognizing the role of design and (implicitly) of typology, this model captures how architects, through their design, can contribute to innovation in collective housing (and corresponds to the self-understanding of their role). Moving beyond directly expressed and existing users' needs and expectations, design can explore and project new meanings of what housing can be about, can anticipate future trends and - combined with radical redefinition of performance - redefine how the housing system work. While not users centred, the radical design-driven innovation discussed by Verganti does not forgo the user, as it provides them with a new interpretation of a product. Still there are substantial differences between investing in an innovative lamp, or even car, and investing in an innovative flat, making the direct translation of the mechanisms of design-driven innovation from design products to housing is only in part possible. These differences involve both the supply and the demand side, and are further discussed in the two following chapters..

Patterns of housing innovation over time

The above approach can be widened through the question of the ***innovation life-cycle***: how does innovation of a given product (in our case collective housing) evolve over time? In the history of housing production in Europe, the collective housing model of the Modernism radically redefined the housing 'application'. The change invested not only the product and the technology applied, but also the system, with the creation of the public housing sector. This can be intepreted both as a response to what economists call a 'demand pull' (the necessity to give an acceptable home to the new urbanized population at acceptable costs) and a 'technology push' (possibilities of the concrete technology, development of new appliances for the 'servantless' house, the lift, etc.). A variety of factors, including war destruction, can be found behind the success story of the Modernist approach towards standardization and efficiency in collective housing. Changes today are instead made in small steps, and do not really touch either the core of the modern model, or its definition of the typological approach. Radical changes concern mostly technological components. Is there a pattern in these changes? How do innovation of a given product evolve over time? Why is housing changing so little?

» Model of technological innovation (Abernathy and Utterback)

The transition from difficult-to-accept prototype to only possible way to go is something that economists call 'emergence of a dominant design'. The emergence of a dominant design has been linked to a radical innovation (creation of new product), followed up by a stabilization phase. The underlying observation is that during its life-cycle a product is interested by innovations varying in nature. This idea was firstly articulated by the American economists Abernathy and Utterback while looking at development over time of specific products, in particular Ford motors. They drove attention to the fact that major costs reductions and improvements are happening in a stage of incremental innovation following the initial experimental phase, with gradual cumulative effects (Abertnathy and Utterback, 1988). They made clear that these phases deserve as much attention as the introduction of a new product. In their view, the pattern of major innovations is consequently referable to three regimes, each with specific characteristics:

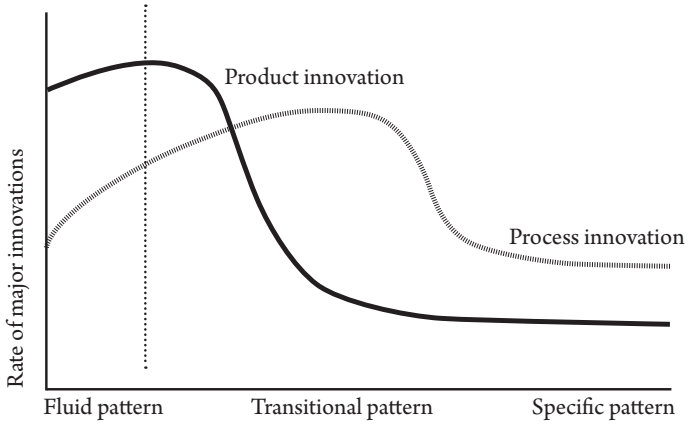
- **fluid pattern**, the product is still subject to major changes, and the process is not efficient;
- **transitional pattern**, at least one product design becomes stable, while changes in the production process happen in major step;
- **specific pattern**, the competition is basically on the cost, changes are incremental to improve productivity and quality.
-

According to this model, once radical change in the production process is achieved, change will tend to be incremental, until the emergence of a new dominant design. Collective housing presents relatively standardized/ stable products (see housing typologies) in front of relatively 'undeveloped' construction processes. Abertnathy and Utterback themselves pointed out the following (1988, p.34):

'More interesting cases are those where the transition from product to process innovation and from unit productions to mass productions, though predicted, has not come about. Examples include home construction, nuclear power, and some other energy alternatives. In each of these examples, experimental programs to stimulate cost reductions, greater standardization, or other aspects of transition have been undertaken under government and private sponsorship; but none has had long-run impact. These cases are of special interest because the model may help in identifying barriers and pinpointing appropriate responses'.

The difficulty in innovating housing production is thus an issue of construction process and technology. The logic here is mass production equals cutting costs, thus freeing resources to make 'better' products, in term of either costs or of performance. Following this logic, the missed chances of the prefabrication industry should get again on the agenda. While this is somehow happening – Ikea and Toyota have for example started to move in this sense- there still not a clear direction about how this should go and how to avoid the mistakes made in the previous attempts.

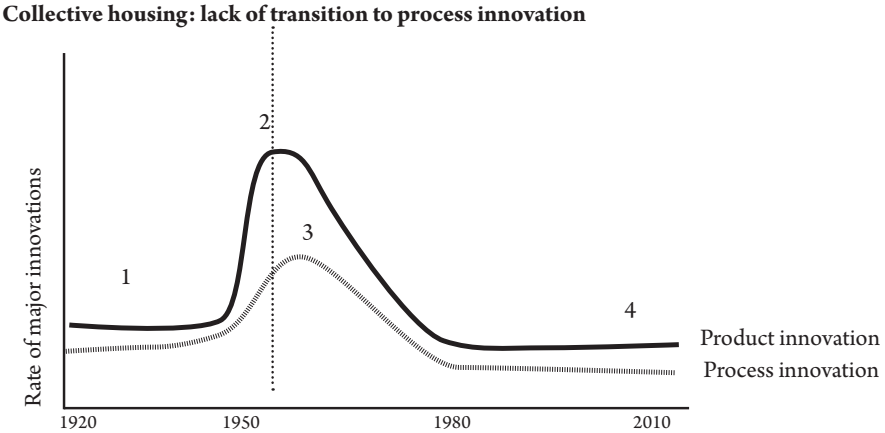
Fig. 6.3
Emergence of a dominant design



In the first phases there are major innovations in the product, in the later phases the process of production present s a higher rate of innovation.

From Abernathy and Utterback 1988, p.27

Fig. 6.4
Collective housing: lack of transition to process innovation



1. Development of the first modern collective housing typologies
2. During post-war reconstruction these typologies become established (emergence of dominant design)
3. Large scale prefabrication is developed in Europe, but fails
4. Current pattern based on incremental innovation, with very limited development in the actual construction technology and typologies.

» ***Model of reverse innovation (Barras)***

But what happens once we look at patterns beyond technology ? Is it really true that innovation is a discontinuous process, where the most determining steps are big ones? Experts of service-based innovations argue that, at least in certain services, the opposite happens. They mostly refer to the work of Richard Barras, who in 1986 was the first to propose a radically different view on the innovation cycle. He noted that in (financial) services the innovation cycle happens in 'reverse', as both the sequence process-product and the sequence incremental-radical are the opposite of what described by Abernathy and Utterback (Barras, 1985). In the Abernathy and Utterbeck model, radical innovation is to be found mostly in the first phases, when innovation is mostly about the product,; in the Barras model, radical innovation is mostly in the second phase, when process innovation takes place. From Barras' point of view ***radical innovation is the result of a continuous process of incremental innovation***.

Barras model refers to the 'spread of technological innovation from manufacturing to services', and it applies well to services with substantial back office technologies, and with strong elements of self-service (Falluji, 1998). It also fits well some of the changes in housing, both past and more recent ones. In his book *Mechanization takes command*, Giedion (1954) described the emergence of modern housing through a similar pattern: the spread of technologies mostly developed in other fields (such as the refrigerator) radically changes the housing requirements to what we know today as standard housing. More recently, a pattern of 'reverse' innovation can be seen also in the spread of Info & Communication technologies to the domestic realm which has taken place in the last twenty years. The resulting blurring between working and living space and times has in fact produced new typologies that go under the name of live-work. These typologies can be considered at least in part radical innovation, as they involve a new housing 'application' on the basis of existing technology (Internet, mobile phone). They potentially question a whole system of norms, mostly of planning nature but not only (taxation could be for example included) based on the idea of mono-functional use of the domestic space.

Live-work is possibly the only 'new' housing typology that has become part of the current production 'palette'. Yet, the relevance of it remains in someway limited and should not be overrated, even when they play an important 'niche' role for the provision of lively and diversified urban environments.

Synthetic approach

The patterns discussed help us understand how collective housing has come to being, and as well how the changes that are taking place today might influence the future. Relevant references are approaches looking at innovation in a post-modern sense, thus not only 'object' and technology based but taking into account 'collective' innovation processes (services, public administration, planning, see table 6.2). As in services, the role of incremental innovation in the housing context is not to be underestimated, as radical breaks might be the resulting out of a continuous pattern of small changes, instead of being the result of big bangs. Yet, a better understanding of the patterns is not sufficient. Innovation defectiveness can and needs to be questioned as a 'market' only approach does not provide adequate performance, both on the short and on the long term. This problem - already identified in the service sector for example concerning the tourism industry and in the planning context - applies to the production of collective housing also for what concerns the question 'How to organise innovation in non-innovative milieus?'. Innovation can/ should be, at least in part, steered: market and public good logic need to be combined. It is in fact in the interaction of these perspectives that we can come nearer to the specific potential and problematic of collective housing innovation.

In order to achieve these combinations, the question of what are the implications of a radical versus an incremental innovation is relevant for all actors involved. The degree of innovation is in fact reflected in the level of risk involved both in producing and adopting it, and different kinds of innovation have very different impact on the existing set ups, both in terms of know- how/ competences required and linkages within the market. The two following chapters focus on the implications of radical and incremental innovation for what concerns the value and the adoption process. The analysis of the case studies (Section IV) provides additional indications about how different types of innovation imply a change in the existing set up and competences, as well as researching the way in which the design contributes to the generation of innovative collective housing products.

Table 6.2
Comparison between innovation characteristics in manufacturing, services, planning, collective housing
in US, Japan: business models are patentable

	Manufacturing	**Services**	**Planning**	**Collective housing**
Innovative core	Technology based Object-based	Organizational People-based	Organizational People-based	Both object- and people-based.
Mode	Staircase	Continuous/ open	Freezing-unfreezing	?
Protection	Patenting	Limited protection*	No protection	No protection
Sequence	Radical - incremental	Incremental can become radical	Not discussed	Incremental- radical/ design-driven?
Aim	Financial profit	Finacial profit	Long term value added	Mix

7. WHICH ADDED VALUE

Short term versus long term value

Innovation, both as process and/ or as product, is about achieving an added value of some kind. Value is consequently a central element of innovation, and the motor that pushes people and organization to pursue it. The questions in housing (as in policy) are what is this value, when this added value should be harvested, and by whom. The answers to these questions represent a key elements in the implementation of long term sustainability of collective housing production and innovation.

Private market actors, in this case private housing developers, are not interested and/or do not have the capacity to cater for the cost for innovations whose benefit are not directly influencing the immediate calculable profit and/or will be available in a second time. As much of the production is built to sell, and not built to let, long term profit and performance are rarely is of relevance. Long term performance, from the developer's point of view, only makes sense in some high end commercial rental housing.

On the other hand, being housing a public good, its logic moves beyond the immediate profit, as it needs to provide adequate performance levels over the long term. Innovation- in the implicit sense of added performance over the long term- is therefore often part of the brief, when public subsidies or other kinds of public intervention are involved. The Viennese body wohn_fonds, in charge of managing most of the subsidized housing production of the city, lists for example 'innovative design contents' as one of the main criteria for selecting the projects to subsidize.

In the developed world, and specifically in Europe, the long term perspective of innovation is confronted and weighted against short term ones developed within the market. This is a consequence of the fact that housing production has been almost completely 'outsourced' from the public intervention to the private hand, and public intervention mostly consists of incentives and subsidies, but not of direct intervention, as discussed in chapter 5 .

Systematic definitions of housing value

In the post-modern notion of innovation, this value is not limited to market value, but includes a much wider range of possibilities, such as better performance. This raises the issue of how to systematically define value. Traditionally in economics housing has been treated as a homogenous good, understood as 'housing services'. More recently economists have been defining housing as a heterogeneous good: a bundle of many product types with different characteristics and quality levels, instead of one product with a defining set of characteristics. This definition is much nearer to the real situation, and reflects the attempts done in the planning disciplines to systematically define use value.

Three possible approaches emerge out of an interdisciplinary perspective about systematic values definitions for housing products:

- **Monetary' approaches*:*** Define value as market value, therefore in form of a given price for a given property. It implies the notion of housing as a homogeneous good, defined through one price,. and refers to property valuation branches.

- **'Quality' approache**s: Based on the idea of value as use value. It focuses on the specific characteristics, or qualities, that maximize the usability. Theses approaches are part of the planning process and public policy evaluations. The use value implicitly refers to an understanding of housing as heterogeneous good and implies the users' perspective

- **'Hedonic 'approache**s: Look at the specific characteristics of the product and at their implicit market price. They are used for property valuation, housing economics, econometrics. Their starting point is the understanding of housing as a heterogeneous good.

These approaches are linked to the roles taken by the various actors in the process, and their disciplinary backgrounds. Consequently, the actors' perceptions of innovation are not only different; they can also be based on ***opposite ideas about what is valuable and what is not***. Understanding where the definition of the different actors intersects, and where they diverge is important in a time when real estate values tend to dominate the decision making process, thus defining the possible scope for innovation within the parameters of a market logic of production.

» ***Market value***

Market value is the most immediate value for housing. It is defined as the price, at which the evaluated property can be sold or let under normal circumstances (Blaas, 2005). Property valuation has developed a variety of methods to estimate the price, for a building or part of it on a given site, time, and conditions, such as existing or new construction, market situation, tenure, legal framework, etc. Comparative methods look at the price of the property to be valued in relation the prices of similar properties. In the investment methods, the price is defined as the amount of net revenue that the property (building and ground) can produce, discounted to the time of the evaluation. In the case of cost base method (or contractor's method), the value is expressed by the cost of replacing the existing building an equivalent new one, reduced according the age of the property being evaluated.

These methods relate directly to the supply side, expressing the point of view of an investor or developer who has to decide to buy a certain site and / or building. They indirectly apply to the demand side in the case of home-ownership. Here the consumption side is combined with a portfolio side: the purchase of a dwelling is comparable to an investment, either in terms of income flow –what would otherwise be spent on rent- or in terms of prospects of capital gain (appreciation over time). ***None of the market methods establishes an explicit link between characteristics, quality levels and related price***. These methods imply the notion of housing as a homogeneous good, defined through one price and do not differentiate between dwellings with higher room heights instead of standard ones.

Table 7.1
Features of market evaluation for residential properties

Which value	Market price / Real estate value		
Method	*Comparative*	*Investment*	*Cost-based*
Based on	Market value	Potential profits	Construction costs
Factors	Market prices of similar objects (average value)	Profit: how much the final user is willing to pay for the good as a whole.	Replacement cost of the building depreciated for obsolescence, use
Measure unit	Price/m^2		
Key issue	From the supply side: How much does the user want to pay now? (re: housing for sale) / How much does the user want to pay in the future?(re: rental housing). From the demand side (re: ownership): Investment+ appreciation		
Applicability	Property valuation, mortgage financing, asset valuation.		

» ***Use value***

Quality approaches focus on usability, or use-value, of the object to be evaluated. They link certain (mostly) physical characteristics of the flat or building to a corresponding utility level. This utility is then defined as housing quality. Literature available reports examples starting from the 1970s, as well as some more recent examples.

In comparison with market-based approaches, no universally accepted consensus exists, and the available attempts tend to be disconnected from each other. Older examples seem to have a much more scientific approach than the more recent ones. The difficulty of standard definition of use-value lies in the selection of an absolute set of characteristics, applicable to every situation. 'Valuable' characteristics are considered dependent on 'Zeitgeist', local conditions, specific aims of the project, cultural context, and the role/ position of the institution or actor carrying out the evaluation. Therefore they need to be constantly redefined. Intuitively one could think that a certain quality level should have an influence on users' investment decisions, and will be reflected in the final price. Yet, ***quality approaches do not offer any direct link between quality levels and market value***.

The method hereby following analysed in detail, the Swiss Wohnungs-Bewertungs-System (Wiegand, 1976, Bundes fur Wohnungswesen 2000, Wohungsbewetungssystem 2008), implies that securing quality needs to go together with optimising resources, and therefore is about achieving the best possible cost-benefit relation. The best-case scenario is when quality levels rise without raising the costs. By breaking down the whole performance in measurable parts, and then evaluating the overall result, these approaches move away from a notion of minimum requirement.

These methods have been developed mostly by or for public institutions linked to a system of incentives. As the role of housing increasingly contributes to the attractiveness of neighborhoods for specific household types, and consequently to the competitiveness of a certain areas, and potential tax revenue, they remain relavant, at least in theory, as they are one of the few systematic tools available to guarantee long-term sustainability. The difficulty of determining how much the objectives represent the use-value of the final users remains.

Table 7.2
Features of use value evaluation for housing

Which value	Use value
Method	*Wohnungs-Bewertungs-System* (Switzerland) and others
Based on	User needs, evaluated on the basis of a survey. The criteria are organized along three levels: the flat, the building and the location (infrastructure and services)
Factors	Evaluation of the performance levels of the project according to predefined criteria and point system.
Measure unit	Points
Key issue	What does the user need in terms of physical space, service, infrastructure? (What will the user need in the future?)
Applicability	Used to ensure 'quality' for projects applying for public subsidies, working as incentive, counteract market failures

The **Wohnungs-Bewertungs-System WBS** was introduced in 1974 in Switzerland by the Federal Office for Housing in connection with Housing and Ownership Subsidy Law. It was later revised in 1986, in 2000 and recently in 2008. It is currently still in use, even if since 2003 direct housing subsidies have been abolished, and it remains a 'voluntary' tool.
The general aim has been to provide a transparent system of qualitative valuation for housing. It was thought for a variety of actors:
-for public institutions, awarding housing subsidies, selecting competitions entries, extra bonuses for high quality projects: private developers, to be used for competitions, comparisons of different options, setting out of required qualities levels; architects, as planning and control instrument; for 'normal people', applying for a subsidy . The 1986 edition reports that private developers had been using the system in private housing competitions. The 2000 edition similarly indicates planners, real estate actors, developers, private clients as the possible end-users of the system.

The system concentrates on the use value for the inhabitant. Usability is translated in terms of dimensioning, furnishing possibilities, general availability of facilities and infrastructure. Formal and immaterial values (including architecture, constructive and ecological aspects!) are not considered for lack of consensus and quantification criteria. The system is conceived as work in progress instrument, as it strongly depends on the expectations of the users. In other words, no absolute measuring is possible, and a constant re-link to an evolving Zeitgeist/ society is needed.

The evaluation distinguishes 3 levels of analysis: **the flat in itself (W1); the immediate surroundings (W2); the location (W3)**. For each level a group of criteria is provided, where each criterion has been given a specific weight. For each criterion the degree of performance can be calculated by putting the actual measurement through the given transformation curves of the criterion. The degree ranges from a minimum of one point (fulfilment of the minimum requirements) to a maximum of four (good level of performance), or even of eight in the case of two criteria considered exceptionally important (see location). Special cases (such as renovation of older buildings, experiments, etc.) imply a revision of the criteria towards the specific objectives. The value is then calculated by multiplying the degree of performance with the weight of the criteria. A series of minimal requirements are also included, linking the household size to the size of rooms and zones, kitchen size (number of modules), bathroom size and number (sanitary equipment).

The flat (W1): Sixteen criteria are proposed for valuating the flat (WBS 2000). The exact requirements depend on the maximum foreseen household size. The maximum reachable value (weighted points) represents 36% of the total value. In other words, the quality of the flat corresponds to one third maximum, while quality of the whole complex added to the quality of the location covers the other two thirds.
Only to the criterion furnishability, reaches the maximum weight of 4. What is judged here is if kitchens, bathrooms and corridors have space enough for pieces of furniture chosen by the user (not part of the standard equipment). A weight of 3 points is assigned to net floor area, number of rooms, possibility of multiple uses, multiple layout options for the main rooms (including the possibility of adding extra beds), presence of a directly connected private open space (minimum depth 140 cm).

Less importance has the possibility of changing the distributive layout or flexible partitions (2 points), the quality of the bathroom fittings, the presence of a window in the kitchen or in the bathroom (1 point each). It is interesting to compare what has been changed between the 1986 and the 2000 edition. Next to having reduced the number of criteria, flexible devices have lost in importance. In the 1986 edition sliding partitions had a weight of 23 out of a maximum 32, in 2002 they weight 2 out of 4 (20% less). Similarly the sizing of individual spaces, such as bedrooms and study rooms: in 1986 this was the only criterion to which the maximum weight was assigned, in the 2000 edition the criterion was left out.

The immediate surroundings (W2): Up to 28% of the value can be derived from this level of analysis. Hereby considered are factors that qualify the immediate surroundings of the flat, such as the presence of a common open-air space, to be used by all kind of ages (children, teenagers). This criterion is measured by dividing the space available by the number of users (number of people living in the building), and subsequently evaluating the degree of performance. The maximum weight (4 points) is assigned only to this criterion. The possibility of renting additional rooms (working or living), or of merging more flats together thank to the presence of puffer rooms is also considered important (respectively 3 and 2 points). The connection flat- parking places, the entrance zone, the acoustic comfort are also part of the W2 value.
In comparison with the 1986 edition, the 2000 gives much less importance to the presence of multipurpose common rooms, rated with only the minimum weight. In 1986 they had the maximum weight (19 points).

The Location (W3): That the necessary infrastructure is provided within the reachable surroundings is the main factor for this evaluation. It is not location in the classical real estate sense, nor are particular features like mountain views (it is, after all, a Swiss method) included. The fact that the value for location W3, with 36% of the total weight, is considered as important as W1(the flat) is one of the novelties introduced in 2000. Previously (see table) its weight, in percentage, was 26%. Accessibility criteria scores very high. Defined as (a) easily reachable well served public transport, (b) easily reachable everyday use shops and local services such as post office, bank, pharmacy, hairdresser and restaurant, and (c) easily reachable regional centres, as defined by the bfs (Federal Office for Statistics), for more specialize services, they are weighted with 7 to 8 points each (in all other cases the maximum value was 4). The presence of schools is important for what concerns kindergartens and secondary schools. High schools are considered less important. Other criteria include the reachability of parks and woods (2 points), local playgrounds (3 points), recreation areas (3 points); social facilities are rated low (1 point).

Market value versus WBS value: The 1986 edition dedicates various pages to the issue cost versus use value. Values resulting from the analysis process can be used to measure the appropriateness of the cost, being this the construction budget and the cost for acquiring the site. In practice, the value W1+W2 (flat + immediate surrounding) should be compared to cost levels established by the Bundesamt fuer Wohnungswesen, and the value W3 (location) with the costs of the site. The judgment to be done is whether high costs correspond to high use value. Should this not be the case, the project needs to be reconsidered. The optimum situation is given when a relatively high use value corresponds to relatively low costs. This is possible because certain qualities (orientation, efficient distribution, …) do no necessarily have an impact on the construction costs.

» ***Hedonic pricing***

Hedonic pricing is a method based on econometric models that can be used to estimate the ***implicit prices of product characteristics***, and then analyse the demand of products characteristics. This method is often applied to evaluate values given to environmental goods, that do not have a price in themselves. By comparing the price of similar houses in different environmental situations, it is possible to extrapolate how much buyers are willing to pay for clean air. Prices of these characteristics are defined as implicit, because they are deduced and do not exist independently.

The traditional neoclassical demand approach leaves no space to the evaluation of different qualities for one good, as it considers each good as homogenous, and same goods with different qualities as one good. In the case of housing, as in the case of cars, televisions, computers, this is not possible, as the goods are heterogeneous, as different bundles of characteristics determine the attractiveness of the product. This means, moving the attention from the good itself to the identification and evaluation of the bundles of characteristics (Haupt, 2002, 18 f.).

The method links quantitative variations of product characteristics to variations of the price. For housing the prices models are estimated through observing actual transaction prices or market values, and establishing a relationship with the qualitative and quantitative attributes of the goods. The first hedonic price models were developed in the '30s in America, and looked either at automobile prices or at farmland (Wen et al, 2005; Haupt 2002). From the late '60s various economists started to apply it to housing, for example to calculate the impact on housing prices of improving environmental quality (such as eliminating air pollution). One of the interesting aspects is the selection of the products characteristics to observe. Literature usually proposes three categories: structure characteristics, neighbourhood characteristics and location characteristics (Wen et al, 2005). However there is not an overall approach, rather different models consider different characteristics.

Table 7.3
Features of hedonic price models

Which value	Value of characteristics (implicit price)
Method	Hedonic pricing method
Based on	Market transactions data
Factors	Characteristics of the dwelling, usually referring to : Flat (size, ...)/Building / Location /Others, depending on context
Measure unit	Price/ quantity of selected characteristic
Key issue	How much does the user (consumer) want to pay for certain amount of a given characteristic?
Applicability	Real estate taxation, aggregate house wealth, property evaluation Potential: Estimation of housing demand for specific qualities and needs

The hedonic method is applied today for mass appraisal and mortgage underwriting, aggregate house wealth, property valuation and property portfolio, real estate taxes. From the point of view of the architect, developer or user, this kind of approach could potentially allow to step back from a generic market price per square meter, and move to one where characteristics are price-defining, helping to understand how much users are willing to pay for specific qualities, and which qualities that might be relevant from a public point of view need incentives.

Rental housing in Regensburg (Haupt, 2002)

Dwelling : Floor quality in the sense of floor finishes / Kitchen quality / Terrace / External spaces: garden, balcony, loggia or winter garden / Heating: central heating, no heating, gas heating, oil/ wood/ coal heater / Bathroom: good, bad, external WC, warm water.

Housing type: single-family, row house, semi-detached, renovation, apartment, maisonette.

Status/ quality: renovation, presence of non heated rooms, overwall installations, bad sound insulation.

Location, micro location: position and orientation of the flat.

Location, macro location: urban-regional context.

In Haupt's analysis, the surface of the flat is the most important characteristic and explains 54% of the variations of rent prices. Bad technical standards (heating, bathroom) as expectable have a negative effect on the price: the lack of heating results in a –42%2 ratio. So does the characteristic apartment, when confronted with other typology: -6,3%, compared to a +22.3% of the one family house. For what concerns the location, Haupt's results include a 'rating' of the various quarters, with ratios ranging from –24,5% to –4.8%. Haupt notes that macro- locations are more important than micro-locations. The macro-location factor considered in the analysis is the distance from CBD (Central Business District), in the sense of Euclidean distance. Nonetheless Haupt seems to doubt the appropriateness of a monocentric approach, and quotes results of empiric regional economy. Alternatives are indicated in reachability (similarly to the value W3 of the WBS) and externalities (positive, like nearness to parks, or negative, nearness to industrial areas). As well, in this model distances have non monotonous impacts on the prices: nearness to shopping mall is positive, but directly nearby is negative.

Amsterdam region (Francke et al., 2002)

House size (m3) / **Plot size** (m2) / **Garage:** detached, annex, built in / **Number of rooms** / **Age** / **Listing** / **Term** in the sense of selling period / **Sales conditions** legal charges or not / **Time of the sale** / **Interior - exterior maintenance levels** / **Type of living room**

By analysing circa 31, 000 transactions within the Amsterdam region, Francke and Vos come to conclusions such as: 'an increase in house size of 10% leads to an increase of the value by approximately 7%' or 'a listed building is about 15% more expensive than a 'normal' house'. To note is also the non-linear relation between quantity of the characteristic and price.

Value and innovation

What emerges from the comparison of the three approaches is the centrality of the user, still with a differentiated perspective. In the quality methods, the central question is a 'what' question: what does the user need. In the price-based ones, the question shifts to 'how much': how much the user is willing to pay.

This centrality of the user is further reflected in the different perspectives of the various actors. ***Developers will concentrate on getting the maximum market price, and will be interested in innovation only as a way to reach higher market prices***. Private developers will not need to reach the highest quality level possible, when the price will be mostly determined by high levels of demand. This is the case even when raising the levels does not involve higher costs, as in the case of no-cost qualities such as orientation. Referring to the usual market value approach, they will tend to consider the price as a 'one' value and not as the sum of more prices for the different characteristics. ***Public institutions will tend to concentrate on added values that raise the utility level***, and will therefore tend to step in to correct the market situation by fixing- more or less methodically - which qualities and which levels are to be achieved.

Hedonic models represent a potentially important connection between the real estate approaches and the quality based methods. They do so by providing information about users' choices of specific characteristics, and linking them to the price they are willing to pay for that specific benefit. These models can therefore help to understand criteria hierarchies of the users, and subsequently help design and policy decisions in a context where these choices play an increasing role.

Innovation needs as well to sell. It could be logical to assume that the extra value of innovative products should be reflected in some kind of systematic valuation. Technology based added values are easier to capture, as they are easily quantifiable, by applying - for example - investment or comparative methods. Particularly clear is the situation of energy saving technologies, such as solar panels, where the investment can be easily compared with the savings it achieves. ***Typological added values and design ones- better floorplans, better natural light, generous room heights, etc.- are explicitly considered only if quality can be put into the equation***. Functional aspects of design will be captured, but not aesthetic aspects or overall coherence. This lack of systematic relevance seems paradoxical, considering recent trends, noted both by sociology and property market, according to which soft values, that include design, aesthetic values and community-related ones are increasingly important.

Verganti, when discussing the value of design-driven innovation in the context of the design industry stated: 'one benefit is peculiar to the radical innovation of meanings: the ability to create products with a life cycle significantly longer than that of the competition' (2009, p.91). Yet, in the case of housing, the benefit of a longer life-cycle are not so obvious from the production side.

From the market point of view, only rental housing needs a very long term resistance, according to the way in which its investment is being calculated. It is in the interest of the investor, in other words, to make sure that the selected design will be able to 'navigate' through societal and needs changes. Housing for sale, instead, will need to fulfil the set of the expectations of the users at the time of the purchase. This situation rarely pushes developers to consider the performance over the long term, and therefore gives the leading role in pushing typological innovation in collective housing either to the public hand- making it an issue of policy, or to the users, and to their openness to accept or not an innovation (see next chapter).

8. WHAT ABOUT THE USERS

Innovation from the users' side

While participative projects represent a valuable and increasingly sought after counter-model to developer-based collective housing, the dominant practice of collective housing mostly confronts users with a finished housing product. It is up to the developer, sometimes in collaboration with the architect and/or with a subsidizing entity, to fix in advance the product characteristics, such as dwelling size and type, number of rooms, layout, and so on. In this set up, innovation is steered from the supply side, as no direct link is established in advance with the users and their specific needs. Promoting innovation in this context raises the questions of how users relate to innovation, and what the barriers are that innovation adoption involves. These issues are particularly relevant today in developed countries, where an increasing number of users are increasingly able to choose, instead of having to accept whatever made available by public housing provision. The shift towards a 'freer' choice gives the user- at least in theory- a much bigger role to play in defining the characteristics of collective housing production. Is this pushing for innovation? In which way? If not, which barriers are there for innovation on the users' side and beyond?

The following pages review existing know-how about the users' side of housing and users' innovativeness (thus the process of innovation adoption) in order to understand how the relation between users and innovation choices works in collective housing. The result, while providing a series of relevant references to frame theses issues, call for further research still missing.

Estimating users' needs and expectations

Studies about innovation have shown that dominant designs are not necessarily the best possible solution. Logical performance assessments are not enough. An easy to grasp example is the so-called QWERTY keyboard I am using to write these pages (Q-W-E-R-T-Y are the first six keys on the top left letter row of keyboards used in US, UK, Canada and other countries). Despite its ergonomic and speed inefficiency, it continues to be the only available option. Other factors, beyond objective efficiency, play a role in the users' choice, with the following paradoxical consequences for housing:

- a 'better' design (in the sense of having some kind of innovative extra value, such as a more efficient floorplan) is not necessarily successful;
- successfully sold/let dwellings are not necessarily optimal solutions.

Companies developing 'normal' products – such as cars - invest large amount of money and energy in the development of sophisticated marketing research techniques to accurately understand the users' needs and expectations. Housing, and collective housing in particular, lags behind. The fact is that here not only we know little about how users react to innovation, but we know also very little about what they expect at all. Collective housing design and production are done on the basis of assumptions and gut feelings either by the architect (who refers to his/her own

private/professional experience of users' needs), or by the developer (who refers to his/her estimation of what will sell where and for how much). Next to these assumptions there is little else to be found about what a dwelling should be like from the point of view of the users, who usually enters the scene once almost all decisions are done and has limited to no influence on the planning.

Why this lack of solid knowledge about users' preferences? It would be logical to assume that simple surveys should help to find out how right or wrong these assumptions were. This is apparently not the case, as obtaining coherent data from traditional users' survey appears to be hardly possible. Two interlinked phenomena are particularly relevant in this context: satisfaction paradox and cognitive dissonance (Häusserman and Sieberts. 1996, pp 218-219).

»Satisfaction paradox

Surveys document that the vast majority of the respondents wishes a single-family house with garden. At the same time, these same respondents declare themselves satisfied with their dwelling. The degree of satisfaction is not linked with the basic standards of the dwelling. In case of objectively substandard conditions, most users (in this case, immigrants, lower income groups, etc.) declare themselves satisfied. And even more surprisingly, the more substandard the dwelling, the higher the satisfaction level. This phenomenon is known as 'satisfaction paradox'. It can be explained as following: satisfaction (for what concerns a dwelling situation) is not an absolute measure, but depends on combining reality with expectations. The expectations will depend on the social group/ level the interviewed persons identify themselves with. What counts is the perceived average of the group, and the average of society as a whole. I will not compare my housing condition to Bill Gates' one, but to the one of my neighbour or of my colleague. I will be satisfied if I see myself in the average or in a better than the average condition. By extension, satisfaction will depend on finding someone who is part of the same group but has a worst dwelling.

»Cognitive dissonance

A second surprising phenomenon results from sociologists' surveys: dwelling satisfaction rises over time, even when nothing changes in the dwelling. Social psychology explains this through 'cognitive dissonance'. People do not give weight to unpleasant/ unsatisfactory things in their lives, such as a non convincing dwelling situation, as they are not anyway able to change it. Only positive aspects are given importance. It is a reaction of self-protection, to cope with a negative situation that cannot be avoided, and that, if fully considered, would cause unhappiness. Thanks to this reaction, the negative factor is not perceived as being relevant anymore. Cognitive dissonance serves to avoid self-criticism or guilt, as the present situation might have been avoided by choosing to buy a different dwelling. The more irreversible the decision, the stronger will be the tendency to 'dissonate' (post-decision dissonance). It is practically impossible for a survey to distinguish between real satisfaction and this self-protecting resignation towards an unsatisfactory situation that cannot be changed.

These social psychology theories are not only aimed at explaining people's attitudes towards their dwellings, they also deal with how people react to innovation. They offer an interesting complement to pure economic theories, where users/consumers are assumed to behave rationally. Cognitive dissonance reactions can also be found in people confronting new products or processes that are require set-up changes. They will tend to select information necessary to make a decision on the basis of a predetermined position. Innovation economists refer to this theory to understand how people within an organization react when confronted with innovation, especially to understand barriers to process innovation.

Ex-ante survey methods, conjoint analysis

A relatively recent and unexplored way for what concerns housing to move around the difficulties of ex-post surveys is the application of choice-based surveys and conjoint analysis. Conjoint analysis is one of the most widely used methods to measure consumers' preferences among alternative product features. Traditional surveys ask users about their preferences for certain characteristics, detaching them from the product as a whole. Choice-based analysis looks first at the preference towards the product as a whole, and then moves towards the relevant attributes. In the case of conjoint analysis, the survey simulates a purchase situation, evaluating trade-off decisions, on the basis of alternatives. Questions are formulated as *'Do you prefer this level of attribute A for this amount of money, or a different level of attribute B for a corresponding amount of money?'*. As the product does not need to exist already, conjoint analysis is often used to test customer acceptance of new products in the pipeline. What is being estimated is the relative importance of given characteristics and their interactions. This method of analysis avoids the risks connected to cognitive dissonance, as it simulates a choice ex-ante, and not ex-post, when 'few would wish to admit that the house chosen was less than ideal' (Leishman et al, 2004 p.1). It estimates the ***relative value of different attributes of the dwelling*** - is a balcony more important than a second bathroom? - potentially bringing the planner nearer to the users.

In the following pages two examples show how ex-ante surveys might be applied to housing. The first is an ex-ante survey of the Munich housing market (Förster 2006, LWW 2006). The second study examines properties between Glasgow and Edinburgh, and uses directly conjoint analysis techniques to evaluate users' preferences (Leishamn et al., 2004). In both cases, attention is brought to the fact that data about users' preferences are scarce:

'Surprisingly, there has been relatively little research examining house purchasers' needs, preferences and trade-offs, and so relative little is known about the extent to which new-build housing meets people's needs.' (Leishman et al., 2004, p.1).

And:

'The analysis of users' preferences in consumers' goods and car industry is highly advanced. In collective housing on the contrary knowledge about clients' needs is mostly the sum of subjective experiences in terms of marketing of the developer' (Förster 2006, p. 156, translated text).

The Munich study shows a general tendency to diversification. Once the amount of square meters has been fixed, the number of rooms remains an open question. Consequently, the study underpin an open and differentiated design approach, where instead of fulfilling a given standard, planning is about confronting options, combinations, ranges.

The study of the Rowntree Foundation combines qualitative and quantitative data, by using statistics, interviews and conjoint analysis. The findings identify a relevant gap between buyers' needs and preferences on the one hand, and house-building outcomes on the other, supporting the idea that the sale of a property is no guarantee that the users' needs and expectations are fulfilled. The study also reveals an interesting contradiction to the general belief that for all house buyers location represents the dominant criterion. The choice based survey distinguishes four groups of buyers, on the basis of socio-economic criteria. For three of the groups, the choice is based on price and location (in this case of suburban type). For younger households with no kids the choice is based on the property type and specifications. They have the greatest potential for non conventional choices.

At the basis of these kind of studies is a differentiated perspective about the users. The studies establish a link between a certain group of users (however defined, usually through socio-economic criteria) and a certain set of desirable housing attributes. Two kinds of difficulties need to be confronted here: the selection of the possible attributes, and the definition of the group characteristics. The attributes have to capture the relevant characteristics for the users/respondents of the various groups, and the specification of who belongs to which groups need to refer to socio-economic features that are by no means obvious. The findings refer to geographically defined contexts, and can hardly be zoomed out to become general, manual-like standards. They pinpoint general trends, and yet provide relevant references about the need to raise the performance of the current production from the users' point of view.

Field research Munich housing market 2006 (LWW 2006)

The study - commissioned to the housing department of the TUM (Technische Universität München) by a Bavarian bank specialized in housing mortgages and financing - was based on a survey of circa 500 potential buyers of flats in the Munich metropolitan area. The questionnaire was focused on the preferences of the respondents in terms of location (urban context + building), size, floorplan organization, windows/facade, outer spaces and atmosphere - this last point being investigated through reactions to a series of photos of residential buildings. It is not a conjoint analysis, as it does not ask the respondents to choose among alternatives. Yet it highlights a series of trends.

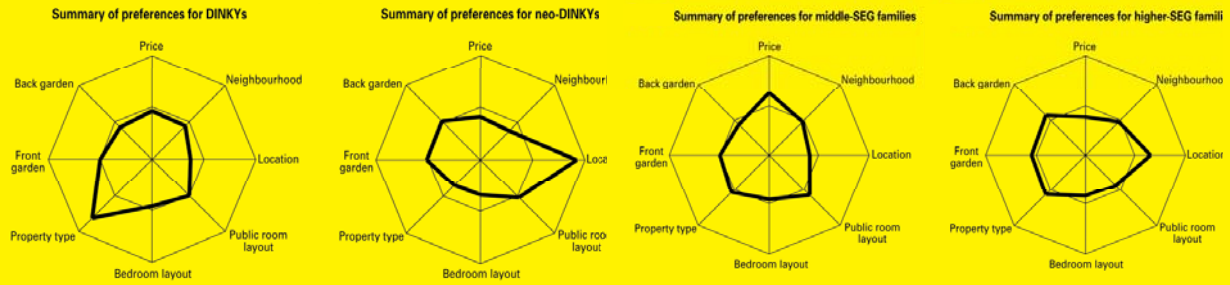
The quality of the housing complex is judged mostly in terms of quietness, rather than of appearance/image. Rooftop and ground floor dwellings, because of the possibility of generous private open spaces, are highly attractive. The most required flat size is between 71 and 80 square meters, but with **strong variations in the expected number of rooms**. One bedroom flats can vary between 40 and 80 square meters, two bedrooms between 60 and 100, three bedrooms between 80 and 120 square meters.

Singles look for 73 square meters in average, while couples and families (including single parents) are looking for circa 90 square meters. 3 to 3.5 rooms (2 to 2.5 bedrooms) are sought by 42% of the singles, by 52% of the couples and 28% of the families. An equivalent range of options can be extrapolated for what concerns the floor plan in terms of day night separation (important for 57% of the respondents), neutrality/ equal sizing of the rooms (important for 47%), open floorplan (44%), two storey units (42%). A kitchen with a space to eat or connected to the living room is important for 91% of the respondents. Big openings in the facade are important for 80% of the respondents, still introspection is a factor. An open space (balcony, terrace, garden) is for 74% an important criterion, with at least 4 square meters. The atmosphere, however difficult to define, plays a determining role in a positive purchase choice. And in most cases the decision not to buy depends on the price.

Conjoint analysis for the Glasgow/ Edinburgh housing market (Leishman et al, 2004)

In the study respondents were presented with pairs of possible houses that could vary by price, type, location, bedroom layout, public room layout and external space. They were asked to say which combination they preferred. 'Respondents carried out a number of choices or tasks, choosing from a potentially different pair of alternatives each time' (p.33). Attributes referred to the product characteristics, including price and property type, and levels describe quantitative aspects (small, medium, large, etc.). Physically, this survey was a set of twenty-two A3 showcards, each presenting two housing options. Each time the respondent was asked to select the option he was more likely to purchase. The sample was constituted by 400 actual house or flat buyers. **Cobweb diagrams** were used to describe resulting users' preferences. Each preference for a specific attribute is mapped on an axis, the total sum being 100. The thinner line represents an ideal situation where all preference have the same relevance. The thicker line represents the preferences as resulting from the survey, highlighting the higher or lower relevance. As the questionnaire covered also socio-economic and demographic data of the respondents, **it was possible to link specific preferences sets/ relative importance of the selected aspects to a specific group**. The diagram shows the relative importance of the various aspects for each group. For example, it shows how **DINKYs main criteria is the property type, while for neo-DINKYs is the location**.

Fig.8.2
Cobweb diagrams describing housing preferences for different users' groups
Source: Leishman et al(2004), pp. 6-7



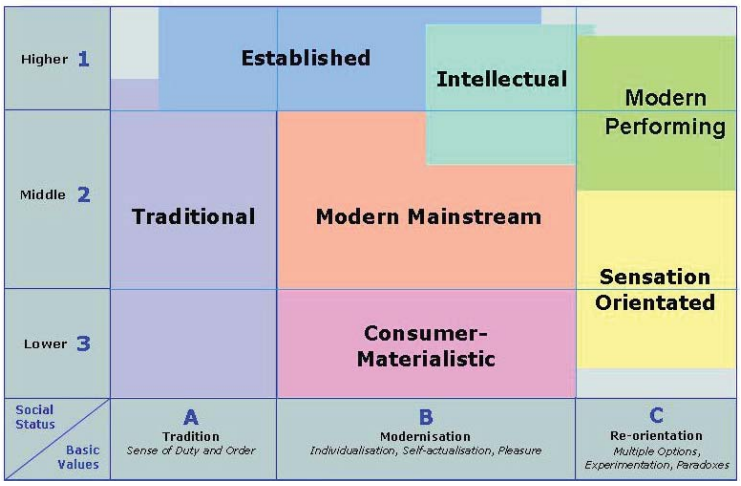
DINKYs: Double income, no kids, younger single households and couples
Neo-DINKYs: Slightly higher prevalences of couples and non-professionals occupations
Middle-SEG (socio-economic group) family: Slightly older buyers, half of whom with children
Higher-SEG families: Higher prevalence of singles and greater predominance of professional occupations

Basic orientations: the milieus approach

The studies about users' housing preferences discussed in the previous pages refer to the notion of group, or segment. Groups are assumed to share common attitudes and aspirations that reflect in similar housing choices. In all studies considered these groups refer to very specific local contexts. General trends can be extrapolated, but lack exactness. What can be said of the big picture?

One possible way out is to further explore a clustering such as the one proposed by the *Sinus Milieu* model (Sinus-Institut 2011, Integral-Sinus-Institut 2011, previously Sociovision). The *Sinus* model, developed as a marketing tool, is aimed at describing fine-grained differences in contemporary society. Next to the social status, it also considers what are shared values between various social groups. It thus represents a relevant alternative to traditional socio-economic groups that do not differentiate in terms of aspirations and values. Graphically, it is a matrix, where social status is mapped on the vertical axis and values on the horizontal one. The various milieus, defined as clusters with shared socio-economic status and values, are assumed to have similar pattern of consume. The resulting potato diagram for specific national contexts (Germany and Austria among others) contains indications for each cluster in terms of percentage of the population. A rougher chequered board had been developed for the Western European context (fig 8.3). The clustering here becomes less fine-grained and instead of milieus, we find seven meta-milieus, grouping together similar milieus from different national contexts.

Fig. 8.3
Western European meta-milieus (Sinus)



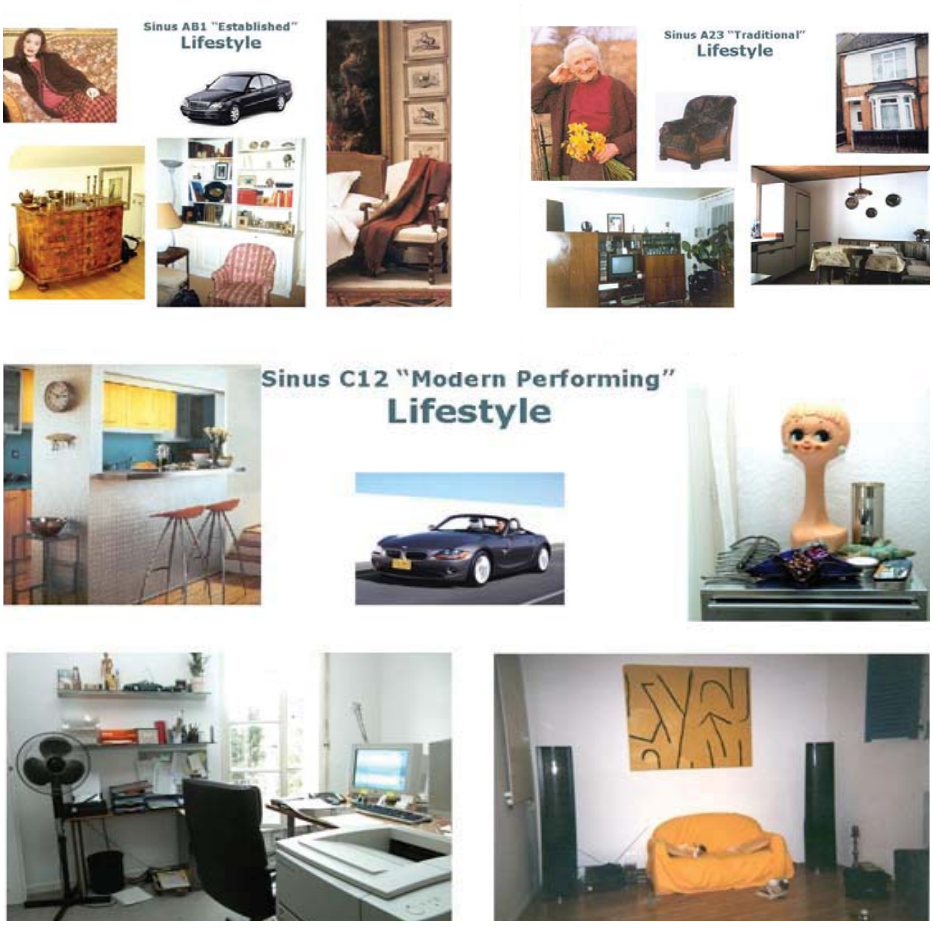
Source: Integral; Sinus-Institut 2011

A23 Traditional: Maintenance of the status-quo. Traditional values such as duty, discipline and order
AB 1 Established: Motivated, leading, status conscious and needing exclusivity
B12 Intellectual: Openness, post-material values. Relevant cultural and intellectual interests. Strive for self-realization and personal development
B2 Modern mainstream: Desire for a pleasant and harmonious life. Strive for material and social stability
B3 Consumer materialistic: Consume-oriented, materialistic. Adopts mainstream consume standards, often disadvantaged and uprooted individuals
C23 Sensation oriented: Strive for Fun & Action, new and intensive experiences. Individualists, spontaneous, provocative and unconventional style
C12 Modern performing: Young, flexible and socially mobile. Live intensively, in terms of success and fun. High qualifications and motivations. Fascinated by multi-media.

Interestingly, and maybe also unsurprising, the 2008 version included in the description of the clusters images of related interior domestic spaces. The underlying statement is that the choice of domestic space expresses contemporary identity (in the contexts of references). Not hard facts, such as income and education, but soft ones, such as the choice of a pattern or of a colour, connect people.

What about innovation? When aiming housing products in general and innovative ones in specific at certain groups, this kind of differentiated understanding of the users proposed by *Sinus Milieu* potentially constitutes an important, even if not yet explored, reference. These are not just marketing, but also planning issues, as the possibility of steering the attractiveness of housing is a relevant factor for the long-term sustainability of the urban environments, not only in terms of resources but also in social terms. A more precise understanding of the clusters should further help a differentiated understanding of the users' attitude towards housing innovation. Again no simple equation is to be expected, such as traditionalist equal high barrier to innovation, as innovation adoption is not only a matter of orientation and values.

Fig. 8.4
Visual description of three Western European meta-milieus



Source: Integral; Sinus-Institut 2011

Estimating users' innovativeness

The previous pages have reviewed existing research about users preferences for housing in general, drawing from different sectors. These studies do not directly approach the issue of innovation adoption on the users' side. This lack of research is not unusual. The process of innovation diffusion is often – and possibly erroneously- considered easy or unproblematic also by innovation economists, who concentrate on the production side and on the source of new technologies (Salter et al., 2006, p.5).

How innovation is being adopted by users is a question dealt in the field of socio-economic sciences. *Diffusion of Innovations*, a book written by Everett M. Rogers (1983)[1], an American sociologist and statistician, remains a fundamental contribution. The starting point is that innovation diffusion is not a top-down process, but a process where individuals are free to choose. His perspective is relevant for collective housing, where people are increasingly able to choose, as well as for innovations decisions done by other units of adoption than individuals, such as organizations, and applies to innovations in policy and planning that have to do with changing systems and collective decision-making processes.

1. The book was first published in 1962

The decision to adopt an innovation has to do with the evaluation of the specific characteristics of the innovation in terms of ***relative advantage, compatibility, complexity, trialability, and observability*** (Rogers 1983, p15-16, p.212 ff.).. These attributes are assumed to positively or negatively influence the adoption of an innovation. Users will in fact evaluate the advantage entailed in the adoption of an innovation compared to the current set-up, as well as its compatibility with it. Complex innovation will be more difficult to accept, while the possibility of testing a new product or observing its use (such as in the case of solar panels installed by your neighbours) are thought to positively influcence the decision to adopt an innovation.

Yet, the diffusion will also depend on the i***nnovativeness*** of the ones adopting it. In Rogers' definition (p.36) innovativeness is 'the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other member of a social system'. Even if individuals are the decision makers in this process, Rogers notes that innovation decisions are heavily influenced by other members of the social system, and that different people have different attitudes towards innovation. Some will be quicker in adopting something new, for others it will take more time. People have, in other words, different degrees of innovativeness. Five steps are necessary for diffusion to happen

- knowledge: becoming aware of the innovation, having an idea of how it works;
- persuasion: forming a favourable attitude towards innovation;
- decision: choice to adopt the innovation;
- implementation: putting the innovation into use;
- confirmation: positive evaluation of the use.

The empiric research done by Rogers and others has shown that ***the successful spread of***

innovation follows a specific pattern. In a x-y diagram, this pattern can be described through an ***S-shaped curve***, where each point on the curve indicate the percentage of people in the context ('system')of reference that are using/have bought a certain product over time. After about 10-25% of the 'system members' have adopted an innovation, there will be a relatively rapid adoption by other members, and a last phase when even more traditional users join in. Different products have different S-curves. The steeper the curve, the more rapidly the innovation gets adopted. The corresponding users' distribution (how many new users have joined the system at a given time) is described through a corresponding bell curve. One of the main contributions of Rogers was to link the sections of this curve (geometrically defined) with the attitude and common denominators of the people residing in them. On the basis of this link, he proposed 5 labels (Rogers, p.243-251):

- **the Innovators** (2.5%): described as venturesome, able to cope with a high degree of uncertainty, he/ she launches the idea in the social system;
- **the Early Adopters or Pragmatists**(13.5%): who use the experience of the innovators to formulate their own adoption decisions. Judicious. In this group are most of the opinion leaders. By adopting the innovation they decrease uncertainty for the other users;
- **the Early Majority** (34%): deliberate, not the first nor the last, trusting the decisions of opinion leaders.;
- **the Late Majority** (34%): cautious, obliged to adopt because they might lose status or economic viability, submit to contextual pressure;
- **the Laggards** (16%), very traditional or isolated, who need a lot of time before they adopt something new.

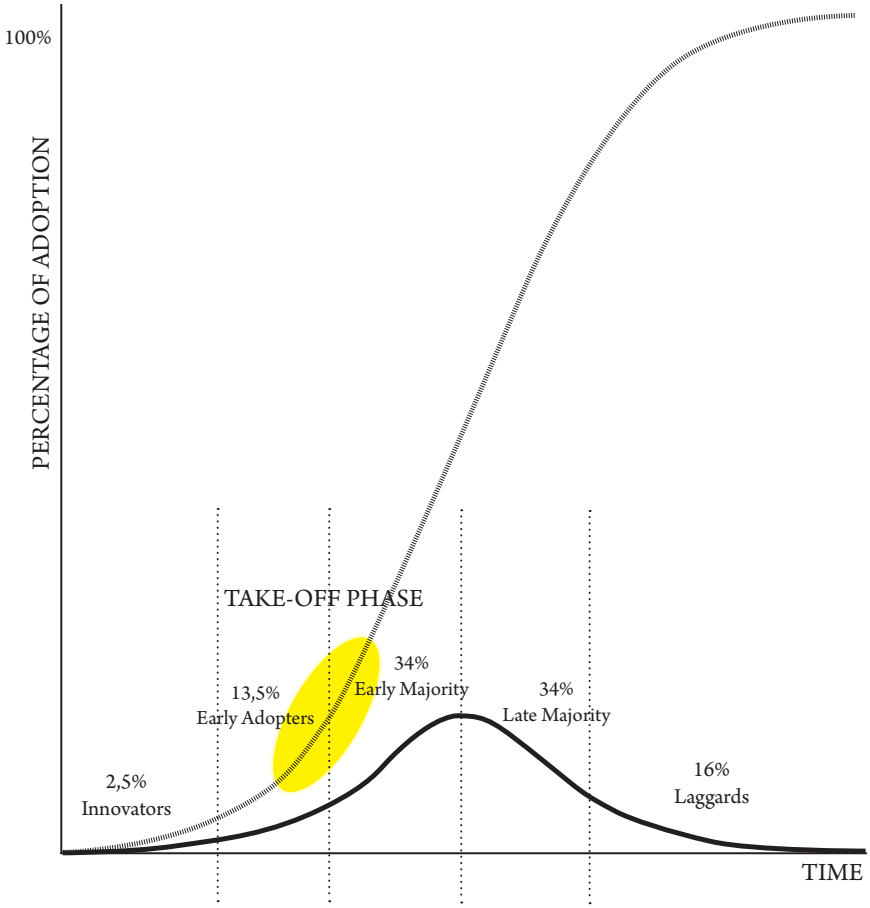
Why adopting something new

Different products have different curves. People might position themselves differently according to the products they are confronted with. They might be Early Adopters for one and Laggards for another. The choice of pursuing innovation is not about how this innovation but how it is perceived by the user:

'like beauty, innovations exists only in the eye of the beholder' (p.212).

Housing is often defined as a conservative market, and the bell curve proposed by Rogers is very flat compared to other products, as it will take longer time for innovations to be adopted, if at all. The Austrian 'innovative' housing developer Winfried Kalliger - behind some internationally

Fig. 8.5
Adoption curves for innovation (Rogers)



Cumulative curve for adopter distribution of an innovation

Frequency curve for an adopter distribution of an innovation

From Rogers 1983 p.249
The S-shape curve indicates the total percentage of adopters at a given point in time, while the bell-shaped curve indicates the percentage of new adopters at the given point in time.

recognized collective housing projects - once mentioned the following rule of thumb: 95% of the people wants 'traditional' housing, only 5% are open to new ideas. This is a bit more than the Early Innovators identified by Rogers, but still not fully including the Early majority who are the ones that decide if an innovation is going to be successful or not. How can we explain this? Is there a specific reason why housing changes so little?

Innovation decisions are driven, according to Rogers, by cost-benefit analysis and by uncertainty. Adopting innovation is about believing in an advantage, in terms of costs, efficiency/performance, or even status. However, the adoption rate will also depend on how compatible the innovation will be with previously introduced ideas and values, as adopting something new and unfamiliar- even if potentially of benefit- involves a large dose of uncertainty. With time and rise of adoption level, uncertainty can be limited. What Rogers describes is basically a domino-effect, where well-informed opinion leaders play a major role in the success or failure of an innovative product. How do the risks and habit influences the adoption of innovation in collective housing?

»Risks

The decision to buy a product has to do with the question: How long am I going to use this product? How easily can I change it if it does not work? The longer I am going to be 'stuck' with my choice, the less likely it is that I am going for an experimental choice. If I have to make a 'life-long' choice, I will go for what I know already, even if this might not necessarily be the best answer to my needs. This can be seen in the different consumption patterns of slow and long turn products (Molotch, 2003). It is easy to experiment and take risks with fast turn products: I will be able to change the situation relatively fast in case I have made a wrong choice. In the case of slow turn products, the more long term the investment, the less risk consumers are willing to take, thus the less experimental the product should be in order to appeal to the majority.

Of all 'necessary' products housing is one of the most slow-turn ones. A dwelling often is perceived as:

- something that will be bought only once in a lifetime, or anyway will be used over a long time;
- when bought it usually is the biggest investment in the life of a person, thus it needs to keep the commercial value over time, if not even offer a capital gain for the purchaser.

Choices are linked to what is considered determining the market value, and to the wish to maximize the future value (see chapter 7). Non conventional choices represent an additional risk, as they might be more difficult to resell. The study of the Rowntree Foundation documented the following paradoxical situation: while the respondents buyers were interested in spacious rooms, they preferred to buy dwellings with more smaller rooms, as they thought they would be valued more in case of a resale (Leishman et al 2004, p 27).

What described above highlights relevant rationalities contributing to the general conservatism of the users' side in the housing market. Innovative housing products are perceived as highly risky both in terms of personal use (I cannot change so easily) and from an investment point of view (I might loose the money I have invested in it). This is not all. Conservatism has also not do with not being ready to change at all. Recent literature concerning disruptive technological products notes that the process of adoption is not smooth, but there is a discontinuity (chasm) between the Early Adopters and the Early Majority (Moore, 2006). This chasm can be generalized to housing innovations, beyond technological products. ***Products that involve a radical change of behaviour might be successful only with a restricted group of users who share very specific characteristics, and might not 'move over' to the majority.*** This chasm gives also an indication of the risks involved in investing in radically new housing. They might in the end only be resold within 'Early adopters', and therefore have a very limited market.

»Habit

As 'previous practice is a familiar standard against which the innovation can be interpreted' (Rogers, 1983, 224), habits might represents a further hindrance to innovation, as ***people are reluctant to change their existing, proven set up.***

Housing plays an essential role in predetermining set ups and life habits, to which people might cling to, even if they are not really in tune with other changes that have taken places in their life. Different needs converge in the housing, from physical to symbolical and aspirations whose roots lie in the specific biography and cultural identity of the individuals guide their housing choices. A series of studies and observations (Clarkec2008; Hickmann et al. 2007) have stressed the growing role of aspirations in determining housing choices Housing choices increasingly relate to a changing set of values, where the way we live is inherently linked to the increased possibility to choose (see raised housing affordability) and to an increasingly stronger link between consumption and identity. Yet Clarke (2008) also notes: 'It is not the simple relation. No yuppie equal loft …. it is not the architect that has the agency, it is the housing typology …'. The rigid notion of who inhabits/ where/ in which style has been discarded by a much more complicated equation.'

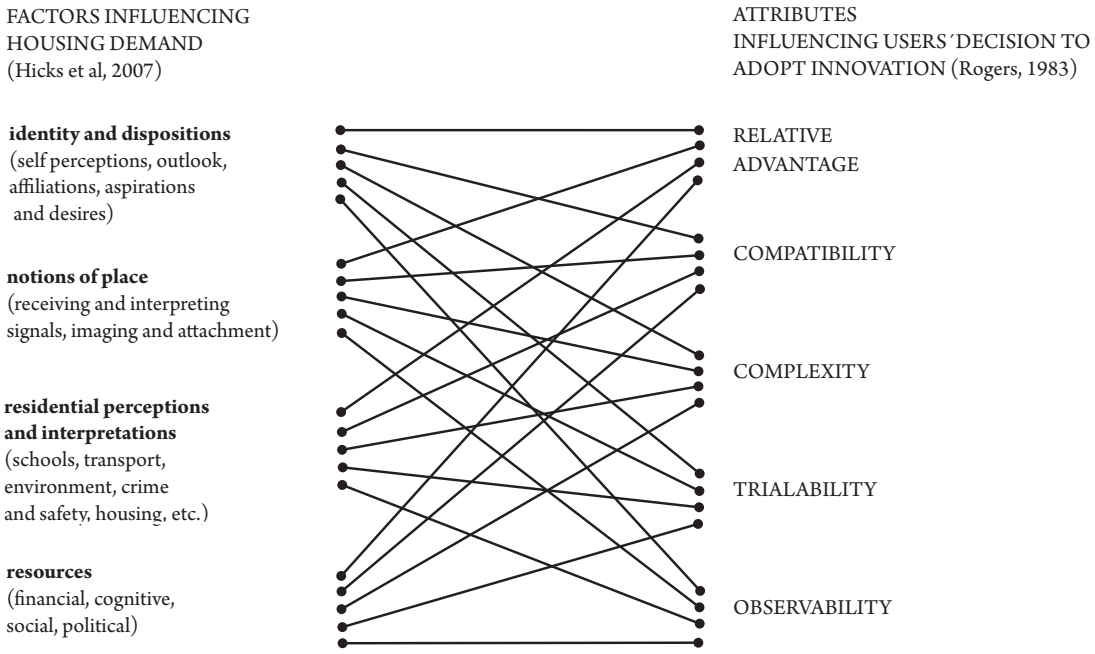
In the case of housing, the notion of habit needs to be understood in its wider meaning. Hickmann et al. (2007), referring to Bordieau's concept of *habitus*, explains habit not just as a settled and repetitive practice, but as a practice linked to aspirations that are 'often formed unconsciously and comprise emotional and reasoned dimensions'. Four bundles of issues drive the housing market change, by determining local demand:

- identity and dispositions based on the person's social and cultural identity and history;
- residential perceptions and interpretations that determine the rational housing choices in terms of home features (size, design, price) and neighbourhood;
- notions of place that involves the related social setting and milieu;
- resources in terms of financial, cognitive, social and political resources.

In all these four dimensions people might want (consciously or unconsciously) to cling to what they know already, or be open / aspire to something new or different.

Pursuing collective housing innovation means to keep in mind that the process of adoption represents an important piece of the puzzle where a coherent body of research is missing. From an operative side, the five levels proposed by Rogers (knowledge, persuasion, decision, implementation, confirmation, see p.69) represent a relevant reference for anybody interested in pursuing innovation on the users' side. At the same time, the complexity of the adoption choice will also limit the possibility of directly linking basic orientations such as the ones proposed by the Sinus Milieu model to housing innovativeness.

Fig. 8.6
The decision to adopt housing innovation



The diagram above (fig. 8.6) proposes a speculative structure to define the multiple dimensions of the choice to adopt housing innovation. The decision to adopt a specific housing innovation is a specific case of housing choice. By combining the dimension of housing choices proposed by Hicks et al. (2004) and the ones of innovation choices (Rogers 1983), this diagram offers a possible definition of the dimensions involved in the users' choice to adopt of housing innovation

The experience of something different might help to open up for innovation- what Rogers defined the 'triability' attribute In his documentation of the emergence of the modern housing typology, Giedieon (1955) indicates in the hotel room one of the laboratories for modern housing innovation. It was in hotels that for the first time people got acquainted with the idea of having a bathroom connected as part of the dwelling. Being the hotel room a temporary solution, users still today are much more open to experiment and test. And that this experience, in return, might influence and change the expectations about the performance of an own house.

III. EMPIRICAL RESEARCH

9. MAPPING HOUSING INNOVATION

Notwithstanding the innovation defectiveness of the sector, experimentation and change are taking place, even if in a limited fashion. What is being tried? What can be learned of already realized attempts of moving out of the existing low-skill equilibrium and non-satisfactory housing production? This part of the work is an empirical investigation of five innovative approaches to collective housing. Next to harvesting existing know-how about what can be achieved and how, the work develops a series of working hypothesis about how to 'produce' housing innovation.

Methodological approach

The methodological approach referred to is the case study research theory and methodology of Robert K. Yin, and his book *Case Study Research. Design and Methods* (2009).Case studies are one of many possible research methods that 'contribute to our knowledge of individual, group, organizational, social, political, and related phenomena' (Yin2009, p.4). Many disciplines such as sociology, psychology, law, anthropology, community planning, business and in innovation economics use case studies both to generate and to prove given theories.

According to Yin, the specific characteristic of this method is twofold: first, case studies - differently from historical research - allow to refer to a variety of sources at the same time, such as documents, artefacts as well as interviews and direct observation. Secondly, the research question/s they are referred to - differently from experiments - concern a contemporary set of events, over which the investigator has little or no control. Context is in fact an essential element of case-studies that cannot be 'divorced' from the phenomenon being studied (Yin2009, p.4 ff.).

As other established research methods, case study research can be used for all three purposes of exploration, description and explanation, but with some differences. Explorative case studies will cover 'what' research questions, such as 'what can be learned out of this specific case study' – they will be however less helpful if the 'what' is a comparative question, such as 'what ways are there to do a certain thing', possibly better answered through a survey method. Descriptive case studies are possible, yet descriptive questions, such as 'who' and 'where', as well as 'how many' and 'how much', will tend to be instead better answered by archival, survey-based, or statistical research. The use of case study is particularly helpful for explanatory questions, such as 'how' and 'why', when referred to contemporary events.

Because of the nature of this method, the answers provided by the studies will not be usable for statistical generalizations. Their value, according to Lyn, will however lie in the possibility of ***analytic generalisation***, as they make possible to 'expand and generalize theories'. In the case of multiple case studies (also sometimes named comparative case method) the analysis can be either based on the presentation of the singular case studies, or not. By comparing multiple cases, a cross-case analysis allows to identify common attributes to successful programs or strategies and possibly to generalize them.

Reference analytical model for the case studies

Economists dealing with this issue of innovation make extensive use of case studies and of the possibility of analytic generalization hereby entailed. By connecting different case studies together they have developed the so called innovation models or static models (dynamic models are instead the ones explaining how innovation evolves over time; see also chapter 6). These are basically taxonomies of innovation, mapping different types of innovation on the base of specific dimensions, such as the interests of the actors (value-chain models, who try to explain how the benefits of a certain innovation are distributed among the actors) or the know-how required to carry these innovations through.

The analysis of the selected case studies of collective housing innovation has been developed with reference to the model of innovation for service-based products developed by the French economist Barcet (1996, 2010). The starting point of the innovation process lies in users' expectations, the specificity of each process is seen in the way users' expectations are linked to the supply of services. This model has the advantage of explicitly referring to users' demand for innovation, or at least to their perceived needs. The model is summarized in four levels, interacting with each others:

WHY/ FOR WHOM

The perceived needs of innovation by specific users are analyzed and linked to other processes of change that might determine or relate to them.

WHAT

The development of the innovative product or service that responds to the needs.

HOW

Innovation in the process linked to the production or provision of the new product.

WITH WHICH RESOURCES

Mostly new technologies supplied from other fields that enable the provision of the new service or the new product.

The first two levels (customer needs, product innovation) represent the demand for innovative services, the last two levels (internal processes, use of resources) represent the supply of innovative services. In this model the core of the innovation lies in the second level, where supply and demand overlap. This kind of synthetic approach allows to build up a comparison of how products evolve, highlighting the different possible sources of change and the sequential processes of change taking place. It is of course a strong simplification, as it tends to see a linear chain of one-way causalities, where in reality innovation is in most cases about interactions between techniques and needs or, to use the terminology of innovation economics, a combination of demand pull and technology push. Nonetheless, the model of Barcet – developed for service-based innovations such as tourism or keeping patients at home - results particularly useful once we look at collective housing not just in terms of building, but as a whole process of provision and use.
In the following table 9.1 a series of recent innovative trends in collective housing have been mapped through the four levels proposed by Barcet. The question 'how' is looked at by differentiating among the various actors involved in the process.

Criteria for the selection of the case studies

All selected case studies present some kind of innovative approach that distinguished them from standard production. Most of them are examples of collective housing well known among the architectural community that have already attracted wider attention. In an architectural perspective the underlying shared denominator is the provision of an extra capacity, as defined in the first chapter.

#1 Borneo Sporenburg, Amsterdam, 2000

• The masterplan of Borneo Sporenbug was focused on the development of new low-rise high density housing typology to provide attractive housing for middle-class families in proximity of the city centre. **Excess capacity:** attractiveness for a specific users group.

#2 Cité Manifeste, Mulhouse, France, 2005

• A pilot project developed to test alternatives to low-quality standards housing production and to show that within the standard frame much more generous typologies can be achieved. **Excess capacity:** generous spaces within the standard financial frame, impulse for urban regeneration.

#3 Familinstère/Social Palace, Guise, France 1888

• A historical example of innovative collective housing, that managed to resist as a housing co-operative over 100 years. **Excess capacity**: long term adaptability

#4 Shelf housing/Basic Building and Settlers, IBA, Hamburg, 2013

• A recent attempt at rethinking the set-up of collective housing production, trying to transfer some of the flexibility of single-family typologies in a multi-level setting. **Excess capacity:** Long term adaptability, users participation, low-cost production

Table 9.1:
Innovation trends in collective housing (based on the Barcet model of service-based innovation)

	FOR WHOM? WHY? INNOVATION = PERCEIVED NEEDS							
	Alternatives to public housing/ direct intervention	**Users' differentiation / flexibility**	**Response to the age 'rectangle'**	**Housing for lower income group ('new poors')**	**Increased income levels**	**Blurring of living/ working/ free-time**	**Respecting the environment / sustainability**	**Flexibility of the workplace**
	WHAT?							
	Indirect public subsidies New quality evaluations systems Redefined role of non-profit actors Public-private partnerships, such as consortia	Housing for specific groups (lofts, sustainable, car-free,..) / Theme housing Customizable housing / Neutral housing	Single housing Assisted living Generation housing Community spaces -New combinations of housing + services	Affordable/ low cost housing Rental housing 'Growing' housing New models of ownership (social buy)	Increased investment in design / aesthetic Increased ratio square meters per person Signature housing New combinations of housing + services	'Multifunctional housing' New combinations of Live-Work- Entertainmnent	Sustainable housing Passive housing Lifecycle approach Adaptable typologies	Short term housing instead of house for a lifetime
	HOW? BY WHOM? PROCESS INNOVATION							
PUBLIC HAND:	Innovative planning processes 'Bauträgerwettbewerbe' New forms of subsidies	New standards through subsidies, pilot projects, new regulations Support of partecipative projects	Incentives for production of given typologies through subsidies, pilot projects	Subsidies for private developers to build-rental housing Mix strategies commercial social housing Prefabrication revival	n.a.	New forms of flexible land use	Raised compulsory energetic standards Subsidies for low energy housing *Subsidies for typological sustainability?*	Housing attracting 'good' workforce, in order to keep up with the global competition
PRIVATE DEVELOPERS:	Mix of profit-non profit aims	'Theme' housing also as marketing strategy	Niche market for assisted housing	Lower than usual profit margins/ Area in development	Marketing of 'soft qualities' New combinations of housing + services (wellness, work),...)	Combination of housing + IT or other infrastructure	Market for low energy housing	Services apartments
ARCHITECT:		Flexible/differentiation design strategies Integration in the design of users Computer aided design with users input		Minimum housing Use of cheap materials Prefabrication Redefinition of normative requirements	Design emphasis on bathrooms/kitchens/ facades	Multiuse of the domestic space Live-work	Integration in the design of new requirements (technology + facade) Robust-flexible floorplans *(contradiction!)*	n.a.
USERS:		Participatory projects New development models (clubs, associations, etc.)				Multiuse of the domestic space Live-work		
	WITH WHAT? RESOURCE INNOVATIONS							
						New ICT	Techn. components	
	CASE STUDIES							
	#1. Borneo Sporenburg,	***#4. Shelf housing***		***#2. Cite Manifeste, #4. Shelf housing;***	***#1. Borneo Sporenburg***	***#5 Westferry studios,***		

#5 Westferry studios, London, United Kingdom 1999

• One of the first live-work projects, developed by a private trust with the aim of encouraging regeneration through employment. **Excess capacity:** neutral spaces for living and working, impulse for urban regeneration.

The proposed analysis explores the levels in which this additional capacity, or extra innovative value was conceived and managed, as well as the results achieved. An important factor in the selection of the case studies was the possibility of multidimensional perspective. The selected projects had to fit in at least two of the three following criteria (defined on the base the three initial levels of the Barcet model):

The projects' were aimed at moving out of standard housing offer available on the market in response to the emergence of new needs, connected to general societal changes or to public aims

and / or

The actual resulting product (the dwelling unit, the building as a whole or its combination with a service layer) was 'new'- where 'new' is here used according to the categories discussed in the chapter 1.1;

and/ or

The project was 'developed differently', meaning by this that it broke in some way existing standard routines or set-ups, involving a change in the way the involved actors – also at institutional level - operated.

Not included in this selection were innovative projects aimed at technology based sustainability, and projects testing the potential of prefabrication. While these are both relevant fields for housing innovations, they were beyond the focus of this work, as it was assumed that in their pattern they will follow the traditional understanding of innovation as a product-based change process and not be of reference when trying to understand how to move ahead in terms of typological innovation and spatial 'hardware'. Also left out of this work is a series of interesting housing examples realized in the last fifteen years in Vienna, mostly in the frame of the *Bauträgerwettbewerb* system. Considered one by one, these projects do not really show radical innovative approaches, while they might do so once considered as whole and in relation to the very strong and in the intentions innovation-oriented system of public subsidies they relate to. The analysis of this system, its results, potential and limitations according to the perspectives on innovation hereby proposed and elaborated is an intended possible follow-up of this work.

10. MANAGING HOUSING INNOVATION: PROPOSED GUIDELINES

What can be learned out the selected case studies? The structure for the following cross-case analysis moves according to the four levels used in the analysis of the individual case studies (Why/ for whom; What; How; With what/ with whom). The focus of this conclusive part is set on harvesting know-how about the development and implementation of innovative collective housing. The most relevant findings have been formulated as a series of guidelines .

» AIMS AND USERS

» INNOVATION CONCEPTS

» PROCESS DESIGN

» SKILLS AND ROLES

» RESOURCES

» POST-PRODUCTION

Definition of innovation's aims and users

The definition of the aims of the projects is the first step done in all the analysed case studies. In all the projects, the initial push was to raise performance at different levels. A wish for raised performance at urban scale (urban regeneration) or at building scale were both possible motors pushing for innovative housing projects. In the cases of urban regeneration the aim was mostly to attract specific users not catered for by the normal housing market through a specifically designed typology. The aimed at users ranged from families in Amsterdam, entrepreneurs in the case of the live-work Westferry studios in London, or low-income, self-builder users in the Shelf-housing in Hamburg.

More general experimental aims included the idea to look and test 'better solutions' for dwelling spaces in general, such as in the case of IBA (housing for the 21st century) and Mulhouse (social housing for the 21st century). In these situations, the users are at the forefront of the aims, as these projects were understood by their initiators as cases of best practice intended to push for a more general betterment of the housing offer. The definition of the specific themes addressing the initial more general aim, such as affordable housing, was either part of the process through the involvement of experts (IBA) or adopted a priori, as part of the vision of the project initiator (Mulhouse).

All projects were lead by 'public' aims, and not directly profit based developments. Post-modern notions of innovation thus apply, as the aim is to raise performance in some way and not profit. Still, in all cases ***limited financial resources represented a strong framework*** and a partial return of investment was expected. In none of the selected cases the public hand directly invested in the housing. Public involvement took the form of subsidies, and/or through facilitating access to the site.

Some of the case studies showed the risk of underestimating the need to match the innovative aims of architects and planners with specific users' expectations, not necessarily open for innovation. Also in cases of declared will to offer better performing housing to specific users (low income, families with children, etc,), the initial assessment of users' needs tended to be based more on intuition than on solid research related to the local and/or specific context. In Mulhouse the users' expectations were derived from a survey concerning the French in general and commissioned by a furniture/ do-it-yourself business, and published on a national newspaper. There was no specific research on local conditions and/or expectations for subsidized rental housing. For the IBA there was no direct research on the projected users, the project's brief was based on what a panel of invited experts assumed affordable housing in the future should be about. Hence ***the question of how resulting radical concepts could fit the specific expectations of the intended users (low-income groups) was not raised***.

In Amsterdam (Case study # 1)the previous experience done by the team of the municipality in charge of a different project lead to the notion that a specific typology was needed to attract families with children. While no specific survey was used to estimate the needs (once again estimated on the basis of own experiences of the client's team), the project was then developed in stages, with a one to one model of the patio housing being built as a sale office on site and the first phase set up as a test phase, in order to check if the new typology was going to be accepted.

Guidelines AIMS AND USERS

» Matching aims and users

Consideration should be given about how the established aims of the project match the expectations about a dwelling of the foreseen users. Knowledge about the users, beyond personal experience, can be derived from milieu studies as well as using 'a priori' surveys, such as conjoint analysis. A posteriori surveys will provide less reliable information, especially concerning satisfaction levels (see chapter 8).
Lacking reliable information, the possibility of developing the project in stages, as done in the Amsterdam case study, appears to be a valuable alternative.

» Distinguish between situations of high and low housing demand

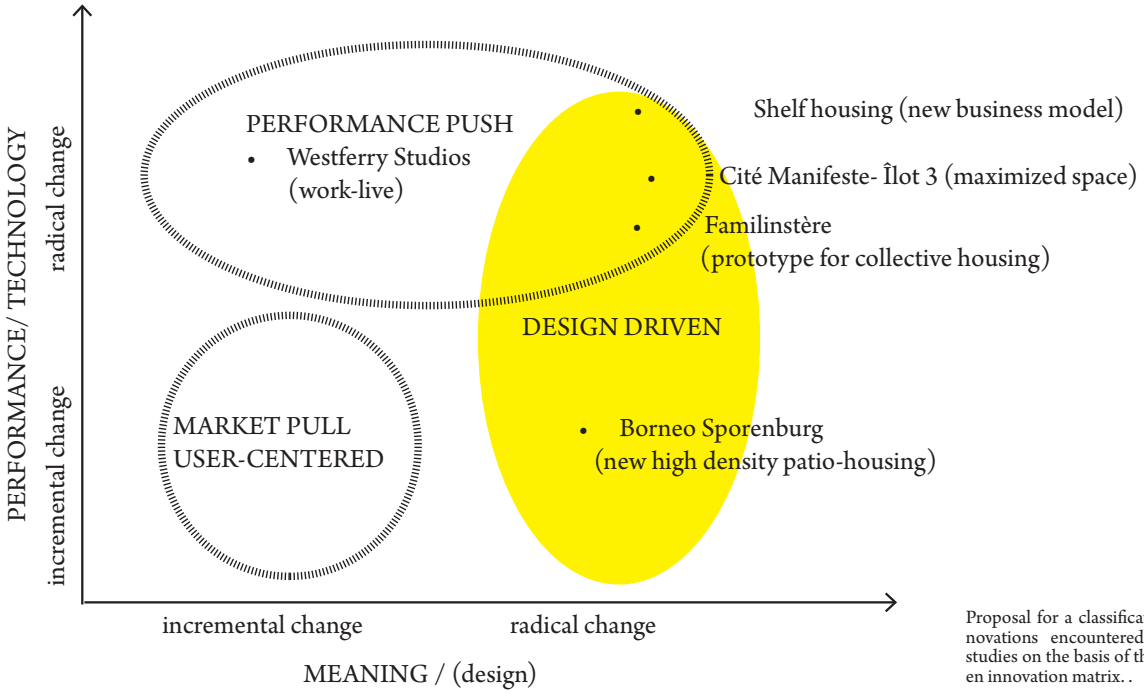
In situations of high housing demand the specific aims might become irrelevant for the final users, as their choice is based on the primary need of accessing a dwelling, regardless of its specificity. It should be evaluated if this is a problem or not in respect to the aims. Countermeasures should be taken if a specific users type or use is essential in the innovation concept (for example users should work and not just live in the units, or a given percentage of the affordable housing should be exclusively for low-income groups, etc.).
On the long term the demand might move back, if the choice by the users was lead by lack of alternatives.

Innovation concepts

Possibly because of this work being done by an architect, the selected case studies all had at least some level of innovative architectural approach, moving out of the standard production and involving new spatial layout of the units and/or of the building. Mostly ***the locus of innovation laid in the connection between the aims and the architectural response***, as innovative aims were achieved by developing new design solutions. In these cases the newness of the aims as well as of the design solution has been judged on the basis of the context and not in absolute terms: patio housing is a well known typology, but was not used in high density urban developments in the Netherlands (see Case Study #1). Its newness lied in the fact that it was perceived as new by the ones adopting it. Similarly, and in the same case, building housing especially aimed at middle-class families with children was not a 'new' aim per se, but it was an aim not yet pursued by that administration and triggered the need for a new approach and development process in order to achieve a new design solution.

The following diagram offers a possible classification of the innovation encountered, distinguishing between innovations that acted within the existing design paradigm and others that through innovative design solutions either provided an incremental or radical change in terms of typological performance.

Fig. 10.1
Comparison of the analysed innovations
Adapted from Verganti 2009, p. 75



Proposal for a classification of the innovations encountered in the case studies on the basis of the design-driven innovation matrix. .

With reference to the general criteria that define innovation, design solution become relevant as soon as they are qualitatively different from existing forms, and consequently perform in a qualitatively different way. The diagram of figure 10.1 also tells us something about the possible users' reactions to the selected approach. Incremental innovations might find a wider initial acceptance than radical ones, as these imply more unknowns and a bigger effort in communication.

Three case studies experimented with products that combined both 'software' and 'hardware', providing both physical space and services. This was the case of the Westferry studios, where the spaces where offered together with the possibility of accessing a consultant for business start ups and Shelf housing, where the participatory design process was combined with special services for building materials provision for self- building. In these cases architectural design solutions played a more complementary role in defining the innovation, as the locus of innovation can be seen in the combination of both the physical and service layer. This kind of innovation has a reference in products combining manufacturing and services such as Rolls Royce offering not just the motor, but a package of the motor and its service maintenance and represents one of the interesting trends for collective housing innovation. Finally the Familinstère should also be counted in this group, as it offered an innovative form of co-operative ownership.

Innovative concepts worked better when the investment involved in the use matched the time perspective linked to the foreseen tenure. Shell buildings, and other options requiring a start-up investment from the users' side, resulted not attractive if combined with a letting perspective too short to guarantee the amortisation of the investment. At the same time, the radical innovative approach of the Mulhouse housing could have resulted problematic if the housing were on sale instead of to let.

Guidelines INNOVATION CONCEPTS

» Differentiate on the basis of the degree of innovation

Innovative concepts have different degrees and kind of newness, and they might be radical and/ or incremental in different dimensions (see chapter 6). An understanding of the nature of the innovation proposed and its consequences, especially in regards to users expectations, is important for the adoption process.

» Combine of phyisical products and services

Innovative approaches can also be developed by combining 'hardware' and 'software', physical products and services. By moving beyond the architecture production many more possibilities to achieve better performing housing can be tested.

» Align the innovation concept with the foreseen tenure

The proposed tenure needs to be put in relation to the to innovation concept. Does the time perspectives from the users side match the time perspective of the proposed product?

Process design

All the analysed projects can be linked to a declared will to innovate from the side of relevant actors, as for different reasons the standard approach to housing design and development was not enough. The projects were part of a predefined exceptional setting. The definition of the 'What' of the innovation happened however in different ways. Some projects started with already predefined specific aims from the clients side, such as produce a live-work building, or urban housing for families with children. In other cases the aims were left quite open, formulated as 'collective housing for the 21st century' or similarly. In these cases, an important part of the process was the specification of the aims to be achieved, in order to define a more specific design task. The brief writing was usually done through the consultation of directly commissioned experts (architecture critics, theoreticians) and has worked best when a balance could be found between defining the task and leaving space open for innovative solutions (see for example the brief for Cité Manifeste, Case Study #2).

A wider call to select the architects, in form of international call of some kind, was only done once the brief was defined. None of the clients seemed ready to venture into a 'simple' open and anonymous architectural competition. Being within a given financial frame has been for all projects a strong requirement right from the beginning, also when radical forward thinking solutions were sought. Consequently, ***the selection of the architects was done mostly through procedures where the client side had a more direct control of not only of the idea being selected, but also of the team behind this idea***. Procedures included direct commissions, pre-qualifications procedures based on previous experience, and design and build bids, where architects and developers were selected as a team on the basis of their shared proposal.

Also when based on competitions, the process was designed so to include a possibility of a dialogue between the various parties, such as clients and architects, and even between architects and architects working on the same masterplan. Many projects, in fact, involved ***workshops of some kind***, out of which some of the most relevant ideas resulted. This was for example the case for Borneo/Sporenburg, where both the first typology able to respond to the masterplan vision and to the developer's expectations was found, saving the whole project. Or in Mulhouse, where the architects were directly selected by the client's side and were asked to cooperate together through an intense series of workshops, in order to make sure that their ideas could as well 'work together'. In both these cases ***the relevant collaboration was not only between architects and clients, or architects and experts, but also - and maybe surprisingly - between different architects,*** who could profit from each other's ideas and creativity, even when renouncing sometimes to part of the authorship's claims. These findings corroborate the relevance of brain storming and collaborative processes and suggest the need to integrate these forms of work in the design of the process.

In the considered case studies, ***the core innovation pursued started chain reactions of some kind***, implying new approaches to a series of connected issues, and invalidating existing routines.

Atypical typologies, for example, required special efforts in the communication to the potential users or marketing, out of the usual routine. Live-work typologies opened relevant issues for taxation, and required in the case of Westferry the local authority to define a new approach to council taxes. Flexible spaces would require a corresponding flexible planning use, such as in the case of Borneo Sporenburg in Amsterdam, the lack of which is often a strong barrier in the use phase to the innovation pursued, and limiting the effectiveness of this kind of approaches.

In these chain reactions sometimes ***unassuming details, especially the ones steering the interface between physical product/ space and service/ innovative use, played a pivotal role***. The level of security of the lock used in a live-work building (Case Study #5) needed to be higher than in a 'simple' residential building, as the level of social control resulted lower (in a live-work building one cannot distinguish between the clients of the neighbouring business and thieves). While this might appear trivial, the risk of burglaries affected users' acceptance of the innovation(see the 'confirmation' step discussed at page 69). The idea of maximizing the surface has an effect on the level of heating required (Case Study #2). The relevance of this kind of details, acting as ***'innovation pivots'*** between concept and use, needed to be understood and managed in order to achieve a satisfactory result. Often their relevance could not be estimated in advance, and required some ex-post reactions, after the official completion of the project.

Even if some kind of special status applied to the analysed project, ***innovative approaches were often reached 'from within' the predefined normative settings***, by searching for creative approaches to their interpretation. Norms in the end define which innovation is possible in which context, and make them difficult to export. The provision of shell construction, as in London/ Westferry or in Hamburg, is for example not possible in Vienna, once the project relies on the local public housing subsidies. In general, norms concerning minimum standards and thermal regulation tended to strongly frame the possibility for innovative approaches.

And even if the aims are 'public' in nature, the ones in charge needed to be able to act as entrepreneurs. Pursuing innovation involved moving away from standard procedures and routines and taking risks that are higher than in a standard process. The people in charge had to make space for extra time and had to restart the process or parts of it when the intermediate results do not fulfil the initial aims.

Public institutions, needing to provide high levels of accountability and consensus and usually operating with standard routines resulted less apt to set up innovative approaches than smaller organizations. In general, private non-profit organizations such as housing corporations were the most common steering actors behind the analysed innovative approaches. They were able to combine aspects linked to private entrepreneurships with 'public' aims linked to providing better performing housing. The exception here is the case of Amsterdam / Borneo–Sporenburg, where a public official had the power and the necessary back up to cope with the high risk involved in the project.

Guidelines PROCESS DESIGN

»Planning beyond existing routines

To realize an innovative approach to housing standard processes and routines need to be reconsidered. The design of an appropriate process and the possibility of modifying existing routines are fundamental.

»Alternatives to standard architectural competitions

In the idea development phase, and especially if a complex solution is required, set-ups that enable dialogue and exchange between architects, clients, planners, developers, users are to be preferred to 'simple' architectural competitions.

»Focussing on performance beyond standards

When looking for innovative solutions, a balance needs to be found between letting space for creative solutions and fixed requirements. Briefs should be based on the definition of performative/ quality levels, and not minimum standards.

»Monitoring of chain reactions and use phase

'Chain reactions' linked to innovative approaches should be considered, including the users' perspective (consequences on subsidy, involved users' investments, public use of semiprivate spaces, taxation issues, timing between construction/contract/users involvement….). A monitoring of the use phase needs to be planned in, as in most cases unforeseen problems will emerge.

»Keeping track of the idea along the process

Revision processes and predefined check procedures should be carried out during the process to keep track of how the concepts evolve, to make sure that the compromises are acceptable.

Skills and roles

In the traditional understanding derived from Modernism the architect is in charge of conceiving the innovation in housing. In the analyzed case studies, this role seems to have weakened, or at least appears to work as a complementary role in a process where other people need to be strongly involved. In all the analysed cases a fundamental role was played by one key actor other than the architect, who acted as ***care-taker of the innovative vision***, making sure that the initial aims were not lost along the process and being a kind of invisible motor along the process. The more power and involvement the care-taker[1] had, the more of the innovative result could be achieved. This was the case of Amsterdam with Ton Schaap and in Mulhouse with Pierre Zemp, where this 'care-taker' was representing the steering entity of the project (either the developer or the developing authority). Both men acted as the project initiator and remained personally involved all along. Their role included:

- Initiating the project
- Defining the aims of the innovative project to be found, defining the brief of the project and the expectations of the project.
- Defining the selection procedure for the architects and/or masterplanner (direct commission, competition open or with preselection, workshop)
- Steering of the 'free spaces' for the design
- Checking that the innovation stays on track during the development process, even restarting the process when the results are not up to the expectations
- Managing the risk, taking responsibility for potential failures, even if in case of success their role is not fully recognized.

1 This role is partly corresponding to what innovation management theories call the *gate-keeper* and/or *promoter*.

It was thus a complex role. Personal involvement in the vision went beyond their professional role and can be assumed to have played a fundamental role in their contribution, together with their willingness to take risks and to make direct decisions. Complex organizations, where a lot of consensus needs to be achieved and decisions are split in many levels, as in the case of public authorities or even something like the IBA, seemed to have more difficulties in keeping the process on track.

In almost all the cases this role of 'care-taker' was taken over by somebody who was not an architect, and whose role was that of supervising the project in some way. The recognition of the importance of a caretaker does not mean that architects are less relevant, but that in the analysed processes the inventive power of the architects was accompanied by another kind of power that could steer the project along the process. Only when these two powers were aligned and could share the aims, good results were achieved.

The role of the architects was in the definition of the product that responded to the aims set by the caretaker or the commissioning authority, sometimes in form of the masterplan. Previously

realized innovative projects by these architects sometimes inspired the caretaker, so a kind of innovative circle could happen, as for example in Mulhouse. The maximizing approach that Jean Nouvel had developed for housing in Nîmes made him one of the possible architects for this project (he was however also the only one of three contacted star- architects that responded to the initial call). Architects resulted in a more dependent role, not at the forefront of innovation conception, but more as the solution finders. Much of their creativity had to do with working within the system, rethinking standard approaches within the given frame provided by the regulations and the finances.

When working as 'solution maker', the architect was not working alone. The chain reactions mentioned above also imply a strong contribution in terms of innovative thinking from the side of the so-called technical consultants (engineers, M& E planners) and beyond. In the case of Mulhouse, for example, the architects could rely on a strong contribution from the engineer, who was willing to put in the project an additional effort in order to optimise the structure. This contribution was fundamental to the achievement of the final result, based on the optimization of the costs in front of the space realized. A scarce contribution of the consultants often puts the concept at risk: it is only possible to reconfigure flexible spaces, for example, if the electrical installations are also thought in relation to the range of planned solutions. If this contribution is missing, the costs to adapt the space will be higher both in financial terms and in term of nuisance involved in the change (construction works in a home are always a big nuisance).

A further important task, even if not always recognized as such, was the communication of the project to its potential users, and to the general public, especially beyond the pure architectural disciplinary discourse.

Guidelines SKILLS AND ROLES

»Innovation care-takers

The role of innovation care-takers is fundamental. It involves setting up the vision, in collaboration with other experts, defining the aims, taking care of the process, managing the dead-ends/ impasses and dealing with the architects. Enough decision power, and a good understanding of architecture and architects are important skills.

»Architects beyond design

The architect needs to accept a more process-based approach. Through the design he will steer much of the results, yet **design alone will not suffice to achieve the innovative aims**. Collaboration and creative exchange with other know-hows is a possible way out, if architects want to steer the innovation and move beyond innovative design solutions.

»Role of consultants

Consultants need to be able to share the innovative approach and to rethink their standard routine. Their role, even if often unnoticed, represent a fundamental contribution to how the idea becomes reality. If they do not play along, they will jeopardise the whole process.

Resources

Exceptional financial resources were not directly part of the building budget and in one case it was part of the requirements to stay within the standard financial frame for low-cost housing (Cité Manifeste, Case Study #2). Indirect financial investment, however, played a role: being part of a bigger set up, such as in Mulhouse or the IBA in Hamburg, provided the project with additional resources especially connected to communication, PR and marketing, contributing to raising the profile of the intervention.

Each of the projects shows that to develop an innovative approach additional efforts need to be factored beyond communication, and this effort results usually unaccounted for. These unaccounted hidden costs involve the management level having to cater for a more complex process and more unknowns; the architects often investing a very relevant creative effort that will only receive recognition but not a financial compensation, and as well the users - who need to put in an extra effort to learn how to use and get used to their innovative dwelling and building.

Difficulties in finding 'creative' financial partner were mentioned as well (Shelf-housing, Case Study # 4, and in cases of live-work not further examined). These may involve users as well, limiting for example their access to mortgages.

Guidelines RESOURCES

»Catering for different kinds of extra-resources (time, risk management, ...)

Innovative approaches require additional resources, even if the building itself does not necessarily need to cost more. Much of these resources tend to go uncompensated, at least in financial terms. A proper process design should cater for additional financial resources to compensate for extra management time, creative inputs, communication and in case of dead–end situations extra investment needed to restart the process.

Evaluation and post-production

Few projects made an objective effort to fully measure the effectiveness of the developed approach. Success was often easily declared in the moment the users moved in or the dwellings were assigned, while ***almost no projects set up a structured monitoring of the use phase from the beginning on.***

Especially in situations of high housing demand, users are ready to accept the product independently from its specificity. The aimed innovative approach risks being missed out if users are not aware or interested in the aim of the projects. In the case of atypical typologies the case studies show that the client's side was much more ready to invest in communication, and that there was a much bigger awareness that users should be given the possibility of understanding the how and why of the architectural choices.

This lack of solid research, both a priori and a posteriori, makes in the end difficult to judge if the aims have been effectively reached and learn out of the experiences done. A relevant question concerns the criteria to measure the effectiveness of the proposed approaches. In general this evaluation needs to go beyond the pure architectural approach and include the use phase.

Guidelines POST-PRODUCTION

»Project documentation and evaluation of the effectiveness

The project should cater for an evaluation of the achieved results that includes the use phase. Additionally, as no ready made recipe is available to measure effectiveness, an effort should be made to define

- what are the aims
- how have they been achieved
- is the relation between achievement and effort has been acceptable? According to which criteria?
- what worked and what could be done differently?

IV. CASE STUDIES

#1 Borneo Sporenburg, Amsterdam , NL (1993-2000)

Type: Masterplan / **Core innovative output:** Patio typologies / **Additional innovations:** Process design; developers consortium; free-hold parcels for individual housing / **Steering actor:** Public authority / **Subunit:** Atypical typology

#2 Cité Manifeste, Mulhouse, FR (2005)

Type: Masterplan / **Core innovative output:** Habitat maximum/ **Additional innovations:** Use assessment of rental housing / **Steering actor:** Non-profit housing cooperative/ **Subunit:** Affordable housing / Atypical typology

#3 Familinstère, Guise, FR (1888)

Type: Building / **Core innovative output:** Collective housing/ **Additional innovations:** Flexibility (historical example of typological sustainability)/ **Steering actor:** Non profit private developer/ **Subunit:** Affordable housing

#4 Shelf housing, Hamburg DE (2013)

Type: Building / **Core innovative output:** Development model; user-led 'infill'/ **Additional innovations:** Cooperation with *Baumarkt* / **Steering actor:** IBA private; private developer/ **Subunit:** Affordable housing / Users' participation

#5 West-ferry studios, London GB (1999)

Type: Building / **Core innovative output:** Live/work; business model/ **Additional innovations:** Shell delivery / **Steering actor:** Non-profit developer / **Subunit:** Live/work


#4 IBA HAMBURG
SHELF HOUSING
#5 WESTFERRY
STUDIOS
LIVE WORK
#1 BORNEO SPORENBURG
PATIO HOUSING
#3 FAMILINSTÉRE
SOCIAL PALACE
#2 CITÉ MANIFESTE
HABITAT MAXIMUM

BORNEO- SPORENBURG, AMSTERDAM, NETHERLANDS, 2000

Number of units: 2150

Typology: Patio housing (low-rise, high density) and block housing

Tenure: Rental subsidized housing (30% of dwelling units) and private commercial ownership (70% of dwelling units). The project included 60 freehold parcels for individual housing

Masterplan: West8, Adriaan Geuze

Architecture: Base typology by Rudy Uytenhaak. Built architecture: various architects including Ben van Berkel, MVRDV, de Architectengroep

Construction year: 1993-1997 (planning)/ 1996-2000 (construction)

Developer: New Deal, an association of housing corporations and contractors with the support of the Amsterdam municipality (Gemeente Amsterdam and Grondebedrijf Amsterdam)

Funding: Public funding for masterplanning process, public spaces design and implementation; private funding (New Deal) and public subsidies for the construction

Fig. IV 1.1
Canal perspective of the 60 built freehold plots.
Source: www.west8.nl/ Jeron Musch

Rationale for selecting the case

An innovative process, set up to define a new typology for needs not catered for in the market achieved successful results in terms of architecture, market's and users' response.

Hypothesis

The success achieved lies in the way the process was designed and led.

Theoretical and policy relevance of the enquiry

The case constitutes best-practice in relevant levels and shows how to 'organize an invention'.

Storyline

Late 70s: The docks of the Amsterdam Eastern Harbour, built between 1826 and 1914, are dismissed, as they are not longer able to accommodate the post-war container shipping's requirements. They are bought by the city authorities and designated as residential area. More than eight kilometers of docks are available. The old hangars and depots constitute a meaningful legacy. The main areas include the former meat market and the slaughter house, the KSNM island (previous docks of the Royal Netherlands Steamship Company), the Ij Island West (future Java Island), the Borneo and Sporenbug docks, and the Rietland. Amsterdam is in a time of high housing demand, the selected aim of the redevelopment is housing. The initial approaches are based on the housing policy of the time, focussed on public housing and strong prescriptions. ***1981:*** The new masterplan defines the district of the Eastern Harbour as one of the areas that could be converted into housing. The masterplan aims to achieve a compact city, moving away from of the dispersion strategy previously adopted. ***1985:*** First policy document concerning the Amsterdam's Eastern Harbour District is issued. ***1989:*** A new 'Policy Document on Basic Principles' replaces the previous one and stipulates that this redevelopment should recreate an urbanity connected to the old city centre. The previous experiences show the risks of giving priority to rationalist principles in planning. The planned redevelopment of the district involves a considerable investment in public transport, including a new tunnel connecting the northern part of the city, as well in the works necessary to make buildable land out of the harbour sites (site preparation included costly decontamination, restorations, connection to the public networks, etc.). ***1988:*** The government issues the Fourth National Policy Document on Spatial Planning, mapping the urban development up to 2015. The policies foresees high density expansions just outside cities, that became known as VINEX sites, according to the abbreviation of the addition to the policy of 1992 (Vierde Nota Extra). ***1988:*** the KNSM planning sees two options for the masterplan, one supported by the residents, and one by the cities and by relevant market players. In the end, the most relevant building in terms of architecture, designed by the German architect Kollhoff, is the one directly commissioned by the residents. The building, named Piraeus, is in line with the spirit of the guidelines proposed by the masterplan, but not with the actual guidelines. Its monumentality and massiveness is in line with the original buildings. It becomes one of the ar-

chitecture icons of the late 90s. ***1989:*** The district qualifies as VINEX site: national subsidies are available. An agreement is signed between the city and the state. The city of Amsterdam will get state subsidies to build 5767 housing units in the districts before 1995. The average subsidies per unit will be approximately one-third of what initially estimated in 1985 (13,800 instead of 35,000 guilders per unit) because 50% of the unit will be not or only lightly subsidized. ***Beginning 90s***: Out of the KSMN Island experience, in the planning process (plaberum) the new subphase - phase 3B - is introduced: after the city has defined the land use and the street map (thus the plot subdivision), an outside designer is charged of the design, in consultation with the city and the private developers. The aim is to commit the market players (private developers and/or housing corporations) to the plan and to 'increase their willingness to invest', as they will be investing in their own plan (Schaap 2003, p.51). ***1993:*** The city starts planning for Borneo–Sporenburg. The masterplan will have to achieve a mandatory density of 100 dwellings per hectare, and a mandatory commercial/subsidized rental split of 70% to 30%. As the previous developments have attracted mostly smaller households, and practically no family with children, to avoid making of Borneo and Sporenburg a yuppie neighbourhood the city planners focus on family with children. They intend to test low rise high density models, based on dwellings with a individual access from the street: 'your own front door'. A first design phase with six architects is set up, in collaboration with New Deal, a consortium of developers. As the results are inconclusive, a second round with an architect, a landscape planner and an urban planner starts. It is the landscape planner Adriaan Geuze from West8 that will get the commission. His idea: a 'sea of houses' cut by narrow streets, and two big 'motherfuckers' blocks in between. The housing typologies and the public spaces are further developed, until New Deal agrees to a trial project of 250 flats (approximately 1/10 of the total). ***1996:*** Adriaan Geuze represents Netherlands at the Venice Biennale. His installation *Colonizing the void* includes a model of the 'sea of houses'. Geuze description of the scheme: 'A suburban housing program is compressed into a high density urban scheme in which the void is defined within the privatized domain to be conquered by the individual urban dweller'. ***1996-1999:*** The trial project is extremely successful. All the houses are sold on the basis of the blueprints within two weekends. Buyers for freeholds parcels are selected through a lottery. The masterplan goes ahead for both islands. The sales brochure is titled 'Own domain in the city. It focuses on variety, intimacy , the fact that it will be different from rest (but similar to the old city centre), and that the flats have an own front door. In other words: maximization of the private domain. ***2002:*** The real estate value of the Borneo-Sporenburg dwellings double since the beginning of the sales, reaching 2,800 Euro/ m2. ***2013:*** A quick search on the Internet shows prices of more than 4,000 Euro/ m2. The information provided by the realtor includes the cubic meters.

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Oostenbrink M. (1999): 'Intensivering van stedelik wonen. De ideale woning in hoge dichtheid in een stedelijk laagbouwmilieu' in: Gemeente Amsterdam - Coördinatieteam Optimalisering Grondgebruik 1999. pp. 65-67.

Interview with Ton Schaap 2005.

Interview with Bert Thjie (owner of freehold plot) 2005.

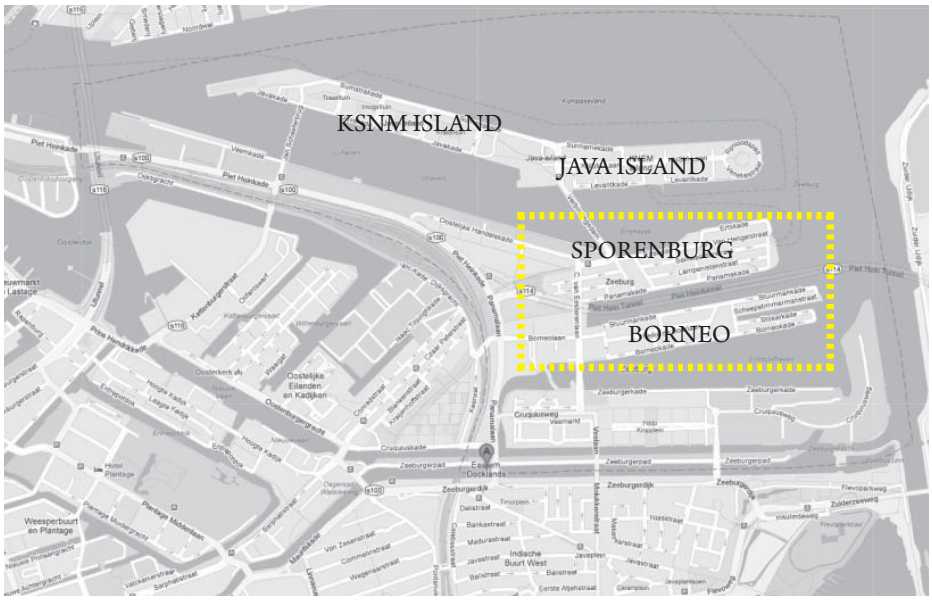

Fig. IV1.2
Site plan
Adapted from googlemaps.com

INNOVATION ANALYSIS

Level 1: Why / for whom

Existing approaches are considered by the projects initiators - the City of Amsterdam's Department of Physical Planning (DRO) - not sufficient, a new approach has to be found. Ton Schaap, the director of DRO behind this project, described the aims that steered the project: as follows:

'When we started working on Borneo and Sporenburg the KSMN Island (also an island on the Amsterdam harbour redeveloped into a residential area) had been finished. So, we could take a look at who was living there, what did they like, and what they didn't. Some investigations were done. People liked it, but there was a big difference between the social housing and the owner-occupied apartments. Almost all of the buildings were apartment blocks, which was quite a special situation because the Dutch tend to live in a house with a garden. In the owner occupied apartments, out of 180 flats, only two children were living there. In the social housing there were of course many children, so we drew the conclusion that people who had a choice, people who had more money, if they had children, they did not want to live in an apartment. They prefer to live somewhere else. So we started thinking about what would be a good alternative' (Schaap, Interview 2005).

The core of the project is the development of housing typologies that will attract users not catered for by the standard production and that can guarantee long term attractivity. From the beginning on the city focuses on a long term agenda. They want to

'build sustainable housing neighbourhood that you do not have to tear down after 30 years, like Bijlmeer or Westlijke Tuinstede' (Schaap, Interview 2005).

In its aims the project is a specific response to the changed role of the public hand for what concerns housing provision. Having renounced direct provision, the public hand intends here to balance between providing for the underprivileged, and making sure that the privileged ('the ones who have a choice') are still part of the picture, in order to support a lively and mixed city attractive and accessible, avoiding 'monofunctional' users (no 'yuppie' neighbourhood).

Even if subsidies are available, it is however up to private actors (mostly housing corporations) to carry the main financial risk connected with a non-standard housing typology. The innovative approach consequently needs to break the existing routines of private developers as well as to fulfil their expectations in terms of return of investment. The aims are multidimensional: there are the specific users (middle class families with children), in order to guarantee long term social balance in the city; there are the housing corporation, who need to join the project and take over the short term financial risk involved in the ambitions of the project. In this the project mirrors in an exemplary way the mix of public and private perspectives that need to be combined in much contemporary housing provision in Europe.

Level 2: What innovation / Innovation concept

The project combines both process and product innovation. The team started the project with the clear awareness that they were looking for a 'new' solution and the question ***'how to organize an invention'*** was explicitly formulated within the planning team (Ton Schaap, interview 2005). Central to the planning process was the idea of DRO of providing each flat with 'an own front door' This slogan became the main hinge of the development project, as well as the slogan with which the project got on - and won - the market. It entails a very sharp separation between public and private space and the elimination of the intermediate shared space typical of traditional collective housing typologies.

The solution had to combine two contradictory requirements. It had to respect the density of 100 dwellings per hectare, stipulated by the Dutch national law. And it had to fulfil the expectations in terms of 'family living' usually connected to low density typologies such as single-family housing or row housing. As no such solution was available on the market, the planning process had to be designed in such a way that a solution could be found. An additional layer in this search was the fact that the final product still had to be attractive for private housing market. Thus, the final result had to create a win-win solution, in line with the visions of the municipal planning department, as well as to guarantee the necessary return of investment for the investors and developers.

The second layer of the project concerns the invention itself, thus the actual architectural product that resulted out of the process described above: a low-rise high density housing development based on a patio typology that provided each house with an own front-door. Patio housing goes way back in housing history, but these forms of housing are typical of southern climates, and were practically unknown in the Netherlands. They represented here an innovation according to the fact that they were new in the specific urban context, and not in absolute terms.

A series of lots, 15, 17.5 or 19 m deep and originally 5 meters, then 4,2 meters wide were the base. The units were designed back to back, with a maximum height of 3 levels, the last level being a roof terrace. The mandated density is very high - 100 dwellings per hectar is approximately the double of traditional patio housing developments. Even if the bigger volumes are there, the patio housing reaches 70 units per hectar. To plan with such proportions, the design introduces a patio, a privatized void between 30 to 50% of the virtual plot volume. The result is a series of refined spatial solutions of front and back, upper and lower intertwined dwellings forming a compact urban carpet able to mask the high density in a low rise, small scale urban appearance.

A mandated ground floor room height of 3,5 m instead of the minimum standard of 2,4m, is introduced to provide light to the ground level in the very dense environment, bus as well to make uses other than residential possible (shops, studios, offices, cafes and bars), thus ensuring a long-term flexibility for the site beyond pure residential. Parking is also happening in the ground floor (actually in contradiction with the vision of multifunctionality for the these spaces.

In the strong logic of the masterplan, the lack of public voids is compensated by the water landscape surrounding the site. This so-called blue for green strategy created a kind of suburban housing without public spaces and achieved a tripling of the usual suburban densities.

In this framework it was also possible to include small private plots for individual clients, with the aim of achieving a modern canal house typology with more fine-grained urban structure. These plots were in the end assigned with a lottery, as they were in very high demand.

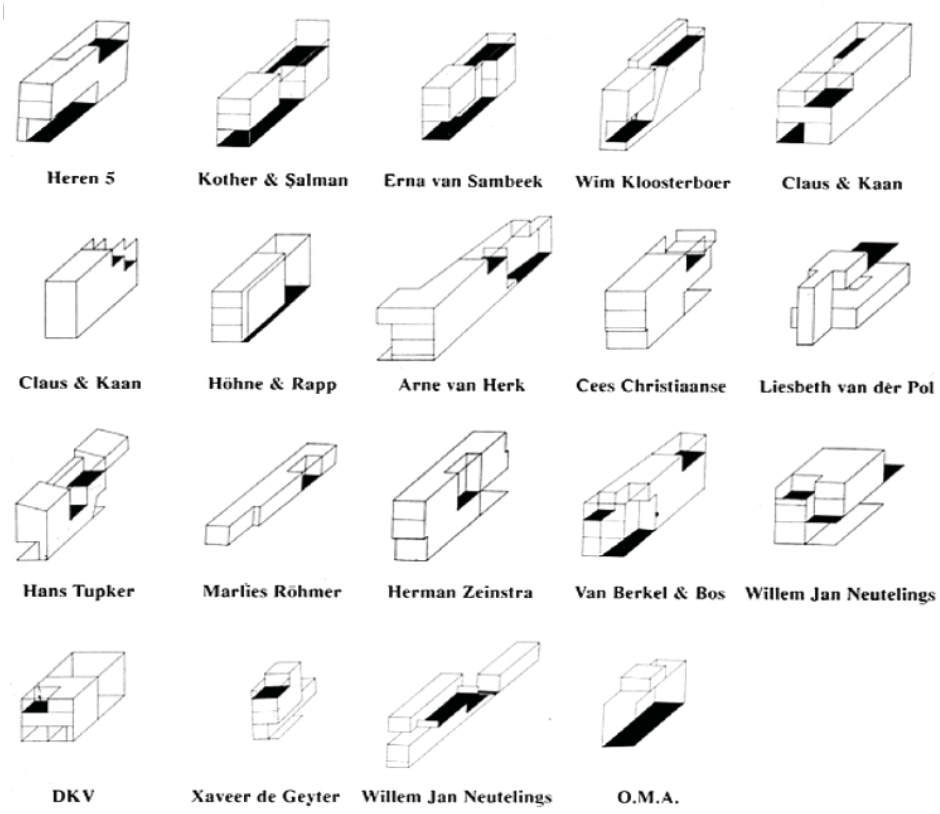

Fig IV1.3
Overview of the dwelling types developed by the architects in collaboration with the developer. Source. Van Dijk et al 1996

Level 3: How was the innovation possible

A public actor - in this case the city planning department DRO - that reaches deep in the dwelling typologies definition, while still leaving the actual development to the private market actors, is an unusual set up. Yet the role of the Amsterdam's Spatial Planning Department was central to the innovation carried out in the project. It stayed in charge of the design process from the selection of the masterplan to the design of the basic typology, thus covering both the planning and the architectural scale. The consortium of developers, selected at the beginning of the process, was kept informed and gave feedback, but did not directly commission the design until the typological solution was found. The DRO provided the developers and the architects a detailed brief, not only in terms of urban concept, but as well in terms of defined dwelling concept.

This strong control from the public side is in line with the Dutch planning tradition, where centralized planning was key to reach an efficient management of land resources and water related issues, in a country were very little buildable land is available.

The design process set up by the city was aimed from its beginning at producing something new. Its success in doing so can be a posteriori linked to a series of essential features:

• the freedom and steering power given to the DRO team, in combination with their personal involvement also as planner and designer. They designed the public spaces, as usual in the Netherlands, but also saw this as a hobby project as here they felt that 'to make something new is always more attractive than to go on and on and on' (Schaap interview).

• the fact that it was for DRO possible to pull the plug and restart in case the intermediate results were not satisfactory enough. This willingness and possibility to restart the process as the intermediate results were not in line is very rare, especially within public administrations that are not in a position to fail when using public money.

'First we did a competition among six architects We gave them a slice of the area, ca 6 hectares and said: put your 600 houses on it keeping in mind the questions that we have put on the paper. Of course we had the secret idea that one of the six would come out with the brilliant idea and we would be finished, but this did not happen. (...) We could see one of the consequences of what we had required: everybody was thinking about the '60s and '70s estates in London, where everybody walks on these decks that are not very attractive, they do not have a feeling of being a public space. So we said, this is not what we want. We really wanted a public space, and this in the Amsterdam sense of the world is a street with bicycles'(Schaap, interview 2005).

'There was always time pressure, because the city had a deal with the central government to build 5700 dwellings before 2001, so every year the chairman of the project had to go to The Hague to say the project is doing ok, but… We had very good eldermen at the time who said: the quality is more important than the quantity, do your best, but go on with what you are doing' (Schaap, interview 2005).

A difficult balancing act for the DRO was to convince the private developers to support the scheme. From the beginning on a group of them – symbolically named New Deal - was set up as a consortium. The city was clearly aware that the project was also about combining two very different agenda: the vision of the city for a neighbourhood sustainable over the long terms, and the commercial aims of New Deal, a combination of the classical housing corporations from the socialist era and normal, capitalist, building companies that had joined in order to offer a very strong combination to the city, but also to make money.

The dwelling typology finally selected presented various challenges. First, it was atypical, and it was assumed that possible buyers would not be able to understand the spaces from the plan only. Secondly, patio houses have much more outer surface pro dwelling unit than standard collective housing, and are therefore expensive (compactness is a very relevant cost saving factor in buildings in general). Not only buyers had little experience with this typologies, but developers as well, raising their risk of miscalculating the constructions costs.

To cope with these relevant uncertainties, an initial test phase of 250 units was defined, with the understanding that the project would have to be changed should the test phase fail. As well, to raise the efficiency, the initial 5 meter width of the plots was reduced to 4, 5m. A regrettable decision, according to Ton Schaap, as it affected the final quality of the spaces. It took the utter success of the test phase to convince the consortium to move ahead with the whole plan.

Fig IV1.4
Sales brochure, 1999
Source: New Deal
A private flowerpot on the street is the selected images, linking the idea or an own front door to a different possible relation between private and public space of Mediterranean flair.

Level 4. With which resource /With whom

A combination of public vision with a private delivery oriented approach is somehow unusual for public administrations. The team was part of a much bigger process of redevelopment of the whole Amsterdam Eastern Harbour and could refer to considerable experience gained in previous projects, as well as then recently introduced phase 3B of the planning process (see Stoyline). In this phase an exterior designer develops the masterplan further, so to be able to ask from the developers a commitment on the basis of a clear definition of the expected results (Schaap, 2005).

Differently from other projects analyzed, there was no exceptional formal setting a priori in the project, but it relied on the enthusiasm and vision of the city planning team. In financial terms, I was not able to obtain clear information about how the project worked in the end. In an meeting in 1997 with a representative of New Deal, I was told that it was still not clear how the project would work, especially because of the extra costs due to the extended outer envelop of patio housing. The city itself had to foot very high unforeseen costs for the restorations of the quays, initially thought to be ok. The DRO team, on the other side, even if not directly involved in the financial aspects, estimated that eventually there was no financial loss from the city side.

The typology outlined in the masterplan maximized individual private space, and consequently the surface to sell, so it seems a bit surprising that developers had initially such a problem with it. Yet, a central problem for New Deal was to break existing routines, a common issue in implementing innovation:

'The developers were very reluctant. At the beginning they said: let's repeat KNSM island, let's repeat Java Island. KNSM was already a success, Java was already under construction and everybody thought that it would be a success. So they said: why put new things on the agenda. what is all this talk about the front door business? In the end we did see three managers of New Deal passing by: one came in and went within 6 months, and then only in the final phase, once there was no way back again, there was a new director. He was the guy pushing the whole thing and he was the guy who realized the project.

An important reference for high density low rise typologies gave the DRO team confidence in the feasibility of the masterplan: the Japanese housing project by Rem Koolhas in Fukuoka. At the time of the decision, the DRO team knew it only from publications, and found out only afterwards the reality very different from what they expected once they visited it:

'We had two examples by the time, that came close to this idea: the Jordaan neighbourhood in Amsterdam, where you have high density, lower rise housing with very small gardens, houses between 3 and 4 storeys. And very narrow streets, because this is the mathematical conclusion. There was also a modern example, in Fukuoka, a project by Rem Kolhaas, which had also the same density and the own front door, but in this case there was no street. The front doors in

Fukuoka are on a kind of space, very unpleasant space, actually. I did not know that by then because I have never seen it in reality, I had seen it only published in Domus, the Italian magazine. So we thought: well, this is a modern example. Later, I travelled to Japan and saw it, and it was not a very big success in Japan (…) Kolhaas' block was a very interesting block, but not a very attractive one.'

Required architects' skills

The success of the project relied on the creative intentions and solutions, from the planning team that started the projects, from the masterplanner who gave the first direction to the solution, and from the architects who developed first the principle typology, and then the final solutions for the different sectors. The masterplan delivered a very strong framework, but called for spatial creativity inside the dwelling. Each architect had to interprete the individual voids – 30-50% of the total volume- in order to provide for daylight and outer spaces. 33 architects for the sectors and 60 for the individual plots were involved.

In this project there is no clear division line between the architectural- typological planning and the masterplanning. Ton Schaap- in charge of the DRO team- graduated in urban design from the Amsterdam Academy of Architecture. From 1983 he had been part of the city planning office of Amsterdam, and was thus involved in much of the planning of whole Eastern Docklands. Adrian Geuze, the masterplanner, had a background in landscape architecture and was already well known for radical thinking and original proposals at the time of this project.

The concept that the planning team decided to follow was from the beginning on embracing more scales at once. Very personal visions within the team were shared. The idea of the 'own front door' was based on the everyday life experience of standard collective housing solutions within the team. An easy and informal exchange was possible at this level:

'A colleague of mine, having children himself, said: 'Well, I am always bored with all those stairs I have to climb up and down with all the bicycles, prams, and all the things that the children need. And then you find also the neighbours things on your way… Let's try to find out something where you can have your own front door on the street' (Schaap, interview 2005).

Fig IV1.5
Sales brochure.
Source: New Deal 1999
Dwellings descriptions of three different types, one of them with a separated work space.

Effectiveness of the innovation ideas and of their implementation

The combination of a planning department with a vision, a masterplanner with a radical proposal, a variety of interested architects, and a city in control of the ground resulted in one of the most acclaimed housing schemes of the last 20 years, at least in architecture. From what discussed above, the scheme appeared to be financially viable and anyway all units, none withstanding their 'being special', could be easily placed on the market. But how did the planners choices reflect in the users? Why did the users go for it?

A study carried out by the City of Amsterdam on compact housing schemes (Gemeente Amsterdam, 1999) interviewed 99 inhabitants. At the time they had been living there between six months and a year. A quarter of them had already been looking for a place to live outside the city. Their preferences were focused on bigger dwellings, generous outside spaces and comfortable interiors. In comparison to the other projects analyzed, the project resulted slightly better than the others in terms of urban surrounding, and much better in term of dwelling satisfaction.

The users were here particularly happy with the architecture of the quarter and the contact with the neighbours, and the architecture of the dwelling, including the dimensioning , organization and the privacy of the interior spaces. Shopping possibilities and public transport (issues that are common in projects that have just started functioning) were considered problematic, as well as the functioning of some of the dwellings as well as the privacy in terms of acoustics of the outer spaces.

The evaluation shows that unorthodox and fresh typologies play a role in the satisfaction of the users, making Borneo and Sporenbug even more preferable than traditional housing projects in a lower density suburban settings. It is also clear that the users are part of a pioneers group, and that the strong identity of the proposed architecture and planning is mirrored in their identification with their dwelling. In order to achieve high density projects, the architecture of the dwelling needs to refer to the specific users and their life-styles and not just adapt to the standard solution (Oosterbrink 1999). **In the right settings architecture plays a positive role in breaking the existing expectation –also of the users - and achieving innovative solutions, where innovative means better performing, not just different from the standard**.

The satisfaction of the first users also included the financial aspect, as they could profit of the raised real estate value, the were 'the real money makers' (Ton Schaap, interview). However, this gain had only effect in the moment the user was reselling, not during the use itself.

The proposed flexibility of the ground floor not entirely coherent and worked through. Bert Tihje, who developed one of the freehold plot, noted how in order to change from residential to commercial use in the ground floor, a fee had to be paid to the city. And in case the use was to be reverted to residential, this sum of money was lost.

Diffusion

The project has received relevant media attention and has become an architectural highlight. The city of Amsterdam, also with Ton Schaap, has then moved forward and by now has completed the very ambitious Ijmeer project extending the city to a pupose-made man made island. This new project did not try to match what achieved in Borneo and Sporenburg in terms of innovation, but relied instead on mostly standard typologies.. According to Ton Schaap, it was not part of the brief. In this perspective, innovation is a mean to achieve a given aim, not a good for all approach.

Lessons learned

The project shows the potential of an innovative idea and ambition, a well thought plan and a challenging architecture. What can be learned is not in the architectural solution, but in the set up and in the way the long term interests of the public hand were negotiated with the short term one of the developers. And for innovation to reach the scale of the dwelling, it was necessary for the masterplan and the public hand to take the responsibility for it and to convince the developer to join in.

Open questions

Under which conditions can this experience be repeated outside of the Dutch planning context.

Fig IV1.6
Kitchen view 2003.

CITÉ MANIFESTE, MULHOUSE FRANCE, 2005

Number of units: 61 dwellings

Typology: Low-rise collective housing, with gardens, wintergardens

Tenure: Subsidized rental housing

Masterplan: Masterplan: Agence Jean Nouvel AJN . Coordination and program: Jean Paul Robert

Architecture: Jean Nouvel AJN (Îlot 1), Duncan Lewis, Herve' Poitin+ Block- (Îlot 2), Lacaton Vassal (Îlot 3), Art'M, Mathies Poitevin, Pascal Reynaud (Îlot 4), Shigeru Ban, Jean de Gastines (Îlot 5).

Construction year: 2005

Developer : Société Mulhousienne des cités ouvrières (Somco), under the direction of Pierre Zemp

Funding: Standard public funding for affordable rental housing (*habitations à loyer modéré*, HLM)

Construction costs: Approximately 12% above initial budget (excluding additional costs due to contractors' bankruptcy)

Fig. IV2.1
Aerial photo.

In the back: Jean Nouvel AJN (Îlot 1), then from left to right: Art'M, Mathies Poitevin, Pascal Reynaud (Îlot 4), Duncan Lewis, Herve' Poitin+ Block (Îlot 2), Lacaton Vassal (Îlot 3) ,Shigeru Ban, Jean de Gastines (Îlot 5)
Source: Moniteur n°5296 27 -05- 2005

Rationale for selecting the case

A recognized example of successful alternative approach to social/affordable housing standards. Critical approach to one of the core assumptions of contemporary housing planning , going for maximum instead of minimum.

Hypothesis

The case provides relevant know-how about which conditions support radical approaches, and which act as barriers.

Theoretical and policy relevance of the enquiry

Testing how specific normative set-ups can help or create barriers for maximizing approaches.

Storyline

1853: Funding of the *Société Mulhousienne des Cités Ouvrières* (Somco), a philanthropic society wanted and financed by local industrialists, with the aim of providing affordable housing for the local workers. ***1853-1897:*** construction of the so called *Cité Ouvrière,* later known as *Cité Muller* or *Cité Dollfuss*, in form of a garden city, funded by the Somco as well as by imperial subsidies. It is the first French project to provide affordable housing for workers. The plan, selected through a competition, is by the engineer Émile Muller. The proposed typology - the *carré mulhous*ien - is a four dwellings house, based on a square floorplan. Each dwelling has two levels above ground and a small garden. A total of 1243 dwellings are realized over 44 years. The financing is based on a system of let to buy that should enable (but in fact impose to) the workers to achieve ownership over a period of 13 years (Studer, 2011), while still allowing for a return of investment for the financing of 4%. ***2001:*** Somco still exists as provider of affordable rental housing. On the verge of its 150th anniversary since the founding, it owns approximately 4000 dwellings and had 50 employees. The city of Mulhouse puts on sale the site of the old Schoettlé factory, adjacent to the Cité Ouvrière. Somco, under the direction of Pierre Zemp, decides to buy the site and use it to demonstrate that even within the standard financial frame it is possible to build much better housing that fulfil the contemporary needs and expectations. The overall aim is to achieve a manifest for the dwelling of the XXI century. Initial contacts are made with top league architects: Jean Nouvel, Renzo Piano and Herzog and De Meuron. Jean Nouvel is interested and sets up a team including the architects Lacaton Vassal and Duncan Lewis. As the site is divided in five parts, other architects are asked to join the team, including Shigeru Ban. The architects can be directly commissioned (without an open competition) because the fees are below the threshold by the EU public procurement regulations. ***June 2001***: The brief for the project is delivered to the architects, authored by the French architectural critic (and former editor of the French magazine *Architecture d'aujourd'hui)* Jean Paul Robert. The teams visit the site together and get to work. They meet every 15 days, coordinated by Robert, in order to exchange ideas and make sure

that the five projects will in the end constitute a coherent ensemble. ***November 2001:*** The building applications are delivered. ***Beginning 2002:*** It is decided to tender all the projects together to one general contractor. Yet the first public tender ends up with only one offer well above the budget (from 20% to 66%, depending on the package). The following negotiations to reduce the offer are not successful. The projects are further developed in order to match the initial budget. ***July 2002:*** A new tendering process is set up, this time the aim is to contract each project separately, including one contractor for the common outside spaces. Exceptionally, a preliminary presentation of the projects is held, in order to explain the technical aspects to potential contractors and encourage them to take part in the tender. ***November 2002 - February 2003***: The new tender is launched. It is only in part successful, some packages are further negotiated and some projects further reworked. A third round of tendering needs to be organised, before the selection of the contractors can be completed. ***Mid 2003 - Beginning 2005***: During the construction phase one contractor decides not to go on with the project and one goes bankrupt. The new contracts require additional budget (approximately 150,000 Euro). Serious technical problems concerning the assembling of the prefabricated steel elements (Styltech by Arcelor) foreseen by three projects, as well as other problems, add to the delay already caused by the prolonged tendering process. ***December 2004 - January 2005:*** The first two projects (Îlot 2 and 3) are handed over. Both the unusual combination of wood, metal and concrete structures of the first and the greenhouse technology of the second project were mastered by the contractors without problems. ***March 2005:*** Îlot 1 and 4 are delivered. ***June 2005:*** With almost two years of delay, Îlot 5 and thus the project is finally completed. Technical difficulties with the adopted Styltech steel element system have significantly slowed down this project specifically, and the result is effected (non vertical walls, acoustic problems, problems with the finishings). ***End of June 2005:*** Opening of the Cité Manifeste by the Ministry of Employment and Social Cohesion, who compares its importance to the 'Charte d'Athènes'. The opening receives a massive media coverage, nationally and internationally. ***December 2005:*** Publication of the study commissioned by Plan Urbanisme Construction Architecture (Bussemey and Buhe, 2005), a service connected to the French Ministry of Ecology, Sustainable Development, Transports and Housing.

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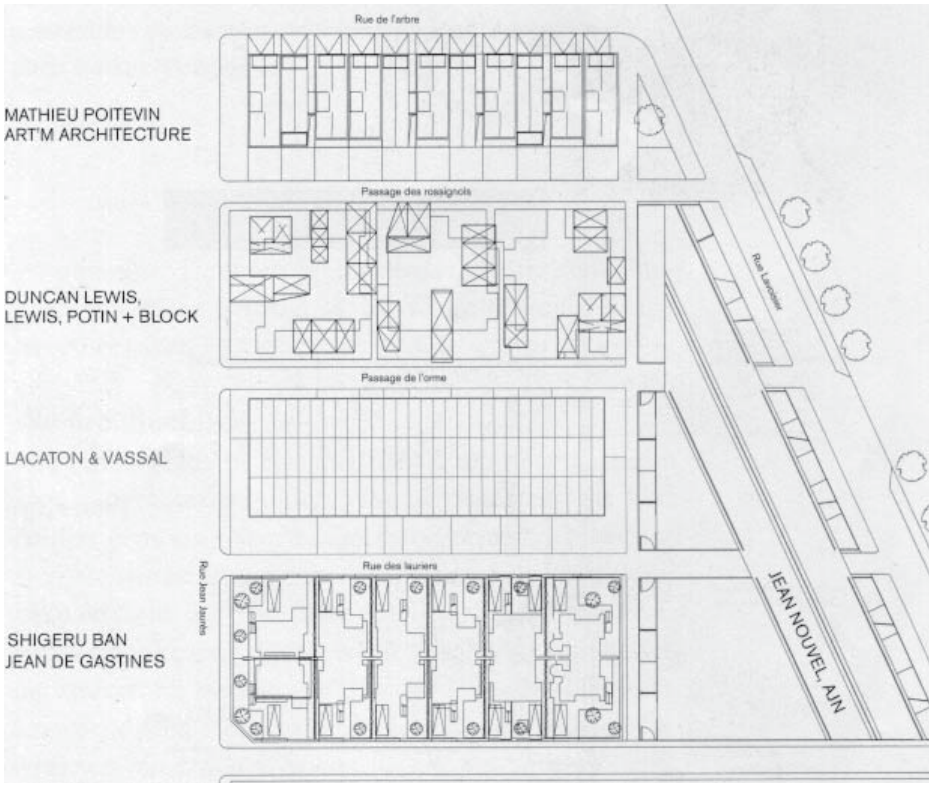

Fig. IV2.2
Siteplan
Source: Press release (2005)

INNOVATION ANALYSIS

Level 1: Why/ for whom

In the broader perspective the intended usefulness of the project can be seen as a combination of three levels: provision of affordable housing to local people with a limited income, giving a new input to the quarter and demonstrate the possibility of raising the quality of housing and specifically social housing production.

» Provision of affordable housing

The project was realized within the frame of the French system of production of subsidized rental housing (*Habitations à Loyer Modéré,* dwellings with moderate rent). To access this housing, usually provided by socially aimed providers, tenants have to fulfill income requirements. From the production side, a maximum construction budget per type of flat is fixed. The tenants were selected through a standard procedure, in connection to their income and the number of family members.

» Input to the quarter

The original Cité Ouvrière had been deemed in need of regeneration, and was included in a so-called Grand Projet de Ville (GPV). The houses of the carré mulhousien are too small, the economical situation fragile. The aims of the GPV for the Cité Ouvriére are: to ensure the social and functional mix, to relink the inhabitants among each other and to the city, to regenerate the commercial and handcraft entrepreneurial network and create new activities and employment offer. The idea of Somco was to create a win-win situation, where the new intervention would also act as a regeneration input in the surroundings, 'to mobilize and pull the rest of the quarter' (Zemp, Site visit, 16.01.2006). The GPV is included as information in the program for the architects, but how to move is left open. The fact of being part of the GPV gave the project access to special funding for communication and PR, which were the only exception in the otherwise standard funding on which the project relied.

» Project as a manifest for social housing

The usual contemporary output of the social housing production system - of which the original Cité Ouvrière was one of the precursors - was deemed not satisfactory by the initiators of the Cité Manifeste:

'Social housing (…) ´has diverged from its objectives : the comfort and the life quality of the ones it is aimed at. (…) The rules and the concept-makers in charge of the production of housing ignore the evolution or the family structure and way of life, the new forms of work, population mobility…' (Dossier de presse 2005, p.4).

The will to achieve an innovative result was clearly stated in the initial program as well as the notion of manifest. The question of innovation is explicit in the program, and it is understood as

something that needs to go beyond the actual project:

'We expect that the project will act as a catarsis and that will achieve a pedagogical value' (Pierre Zemp, in Bussemey and Buhe, 2005, p.13)

Central to the innovation is the notion of quality of life, to be achieved, among others, by allowing users to appropriate both interiors and exteriors spaces. The explicit reference is a study carried out for the furniture manufacturer Leroy-Merlin (a kind of French Ikea) about the expectations of the French concerning their dwelling, published in March 2001 in major French newspapers and included in the programmatic documents given to the architects involved. Among other trends the study indicated that rooms are expected to be transformable, according to the evolution of the family and its specific needs. The dwelling is perceived as a protective bubble open to the outside world, and a place where each develops more and more personal activities.

The project was consequently from the beginning aimed at achieving an exemplary status, while fulfilling basic needs of traditional users. Accordingly, it was clear from the beginning that both for what concerned the financing and the selection procedure of the users the project had to be like any other project of Somco.

Level 2: What innovatio/Innovation concept

All the five architectural proposalsinclude additional appropriable spaces. This idea can be referred to the wider notion of soft flexibility already explored by Jean Nouvel in Nîmes (housing Nemausus 1, with Jean-Marc Ibos) and Lacaton Vassal in the low budget single family house Maison Latapie in Floirac. Minimal surfaces are seen by the involved architects as an inherent and relevant shortcoming of the common housing production, and specifically of the production with more circumscribed financial means (affordable and social housing). They impose on the user the control of the architect. More generous surfaces give users the freedom of interpreting their spaces and achieve a more far reaching individual appropriation in response to contemporary needs.

Additional appropriable surfaces are added and/or integrated in the dwellings, and include spaces that can be adapted to living use over time, such as the garage, heated, that can become an additional room, the extensive conservatories that work differently according to the season, the fillable voids, the attic that can be transformed into an additional room. The additional spaces are achieved within the standard constructions budgets. With a global budget overrun of approximately 12%, each dwelling is 15% to 148% above comparable standard sizes. The rents, however, relate to standard flats. If in 2005 a rent for a subsidized three-room apartment of 60 m2 is approximately 330 Euro per month, the rent for the three-rooms apartments from 95 to 105 m2 in Îlot 3 ranged between 333 and 370 euro. For a 12% higher rent ,75% additional square meters.

In order to achieve these additional spaces within the standard budgets, the architects make use of elements of industrial buildings, unusual for domestic architecture. As a consequence, the houses they propose are not only different in terms of typologies of spaces offered, by they look different (presumably intentionally so). A more detailed overview of the innovative aspects of each project can be found in table IV.2.1.

The innovation core lies in the innovative attributes of the produc and in the fact that these attributes could be achieved within a standard budget. This example makes a very convincing case that it is possible to achieve better housing even within standard settings of subsidized affordable housing.

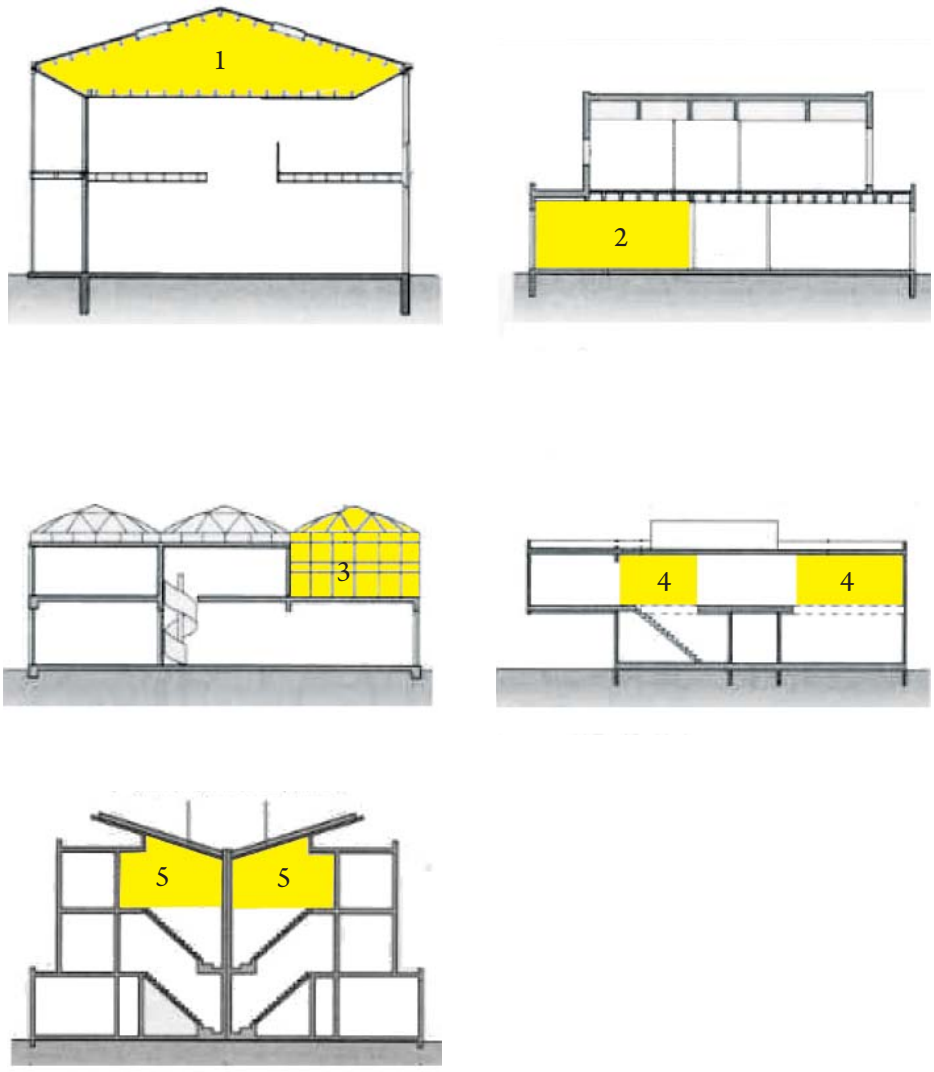

Fig. IV.2.3
Appropriation schemes for the additional spaces
From the top left to right:

Îlot 1: Attic space

Îlot 2: Garage

Îlot 3: Winter- garden

Îlot 4 and 5: Double height spaces where an additional floorslab can be added.

Source: Cahier Technique du Bâtiment n°254 sept.2005, p.76.

Table IV.2.1
Overview of different approaches to innovation in the different sectors, including main feedback and average costs per flat

**see Bussemey and Buhe 2005 pp. 72-7*

	Innovation dwelling	***Other***	***Feedback***	**Average construction costs per flat ***
Îlot 1 AJN	+ 50% of the surface usual for this flat types Attic as potential additional space Individual sanitary equipment (shower, sink) for each room Double height living space	Electrical celiling heating	Extremely high heating costs in the winter and overheating in the summer, lack of sun shading elements	110,187 Euro 24% above objective
Îlot 2 ART' ARCHITECTURE	Transformability : users can add to or change the layout. Open floorplan also in the night zone (up to the user to partition it) Thermal insulated oversized garages, directly connected to the flats could become living space (heating not provided)	Combination of concrete, metal and wooden structural elements. Shifted insulation between ground and first floor	Partitioning of the outer space required by the tenants Overheating in the summer, need for sun shading for the upper windows	83,522 Euro 4% above objective
Îlot 3 Lacaton Vassal	Loft, combined with a double envelop system Maximized surfaces with different qualities >3m room heights	Use of horticultural green house technology , combined with elements in polycarbonate and glass and with insulating curtains for the outer envelope Centralized automated natural ventilation system for the spaces in between the envelops (*jardin d'hiver*)	Very high users satisfaction Logic of zones: different patterns in the use of space (such as multiple dining spaces in a flat) Internal climate under control Lack of internal partitions = lack of acoustically insulated zones in the flat (problem with small children,etc.)	76,641 Euro -4% below budget . Raised total budget catered for two additional flats and lowered the averaga cost because of economies of scale
Îlot 4 SCAPE	Vertical gardens Accessible roofs Double height living zone Shared terraces	Use of Styltech metal structures Use of insulated panels developed for industrial cooling rooms	-Plants needed to be substituted (no external water tab)	97,500 Euro 22% above objective
Îlot 5 Ban + de Gastines	Living room on the first floor, double access	Prefabricated wet cores Use of Styltech metal structures (decided later in the process)	Kitchen too small Stagnating water in the terraces Overheating in the summer	99, 135 Euro 24% above objective

Level 3: How was the innovation possible?

Even if the project was developed according to the standard procedure in place in France for subsidized rental housing project of this kind (*habitations à loyer modéré,* HLM), there were non-standard features that allowed and/ or contributed to the innovative level of its output.

Programmatic and normative free spaces

» Open formulation of the program

The work of the architects was based on a program (*cahier des charges*) unusual in a number of ways. Next to 'practical' pieces of information concerning issues such as time tables, budgets, norms applying to social housing and the historical background of the site, the document indicated a series of innovative aims that the client expected to achieve in the project. Yet this was done not in terms of constraints – as usual – but in an open formulation, exploring general and specific issues that the projects should relate to, and at the same time avoiding the fixing of a strict functional or spatial program. The selected format in this part of the program is an interview with Pierre Zemp, two articles of 2001 about housing expectations of the French (based on a survey), and a text by the critic Jean Paul Robert about the relevant notions for the project. What emerges is a specific focus on three aspects: life quality and comfort, the possibility of evolution and modularity of the spaces, and the link between public and private spaces. The result is a very open programmatic document, concentrated not on the quantitative aspects of the project but on a series of qualities or attributes deemed relevant to achieve the overall aim of the project. The architects are asked to develop, through their projects, a position on these issues. The term 'Cité Manifeste' has already appeared at this stage, as title for the document.

» Quantitative free spaces:

The normative requirements the proposals have to fulfill are equal to any other project of this kind. Still, the total buildable surface per plot is variable – and can therefore be raised, as long as the budget per flat is kept. This allowed both the production of the central innovative proposition of all the projects (appropriable spaces) and the possibility to control the budget by raising the number of flats built and achieving better economies of scale. Usually the price of the site is based on the maximum buildable surface, and appropriable spaces such as the one proposed here represent a loss of fully usable surface and lower the return of investment.

'In Mulhouse, to respond to the fear of getting over budget of the client, we paradoxically raised the total surface, instead of reducing it, in order to raise the number of dwellings and build two additional ones. Even if this additional surface had a cost, this cost was lower than the value of the two dwellings (…). In conceiving the dwellings, we started from an average budget of 75000 Euro per dwelling, without trying to extrapolate an average construction cost per unit of surface, as this makes s in the end little sense in our approach. One also has to keep in mind that state subsidies are given per dwelling, and not on the base of the built surface.' (Anne Lacaton in Rouyer, 2006, pp. 337-338).

» ***Collaboration instead of competition***

That the involved architects had to collaborate intensively with each other to achieve a coherent ensemble was one of the few constraints of the brief. Yet the fact that this collaboration actually took place can be connected to the selection procedure, done by direct commissioning by Pierre Zemp (Somco), on the basis of a list provided by Jean Nouvel. Some kind of shared background among the architects could be thus expected from the start.

Further more, the fact that the project was directly commissioned to the architects, and not based on a competition procedure, is explicitly named by some of the involved architects (Poitevin, Lacaton) as a relevant positive factor contributing to the success of the operation, as it gave the group more freedom to interact and exchange in the desing development phase and beyond.

»***Special effort in the communication of the architecture***

The 'atypical' typologies proposed in the projects led to an exceptional effort in the presentation and communication of the project. This effort was at the general public, but as well at the potential contractors in the tendering phase and the potential tenants in the assignment phase.

Because the project was unusual, it was with reason feared that the offers would be higher than necessary. Therefore, after the failure of the first tendering procedure, Somco organized a meeting with potential contractors, in order to explain the projects and encourage them to submit an offer. This meeting required a special authorization, as in public tendering procedures, because of fear of price fixing among contractors, such presentations are not allowed.

The projects presentations held by architects and Somco for the potential users were a second exception. The information to the future tenants had to make clear from the beginning that the dwellings are not traditional ones. The Somco advertisement in the local paper explicitly described the project as 'innovative program' (*program innovant*, Bussemey and Buhe 2005, p.87). The first presentation of the project took place after the first selection of interested tenants during an doors open day, even if not all projects were already completed. The idea was to react to preferences for given projects, but this resulted in an impossible task, as unfinished projects were hardly considered. The second visit was done after the preliminary assignment of the flats, the third visit was done for the tenants that were selected as replacement for refusals. During the process, it was possible for tenants to shift their demands to other more traditional dwellings.

Level 4: With which resources / With whom

The project had a strong exceptional dimension from its inception, thanks to the anniversary of the foundation of Somco, the historical reference to the *carré muhlhousien* and the sense that the project should go act beyond the immediate housing provisions, should be a manifesto, should write architecture history . It is safe to assume that this dimension was a resource, stimulating the efforts of relevant actors, including here not only client and architects, but users as well. This exceptional dimension of idealistic nature did not provide any additional financing, and this consciously so. It was in fact part of the approach to innovation of the project initiator that all

conditions around the actual architecture design of these dwellings should stay same as all other projects:

'To have an exemplary value, the project has to fit within the normal financing framework of subsidized rental housing: it does not receive any specific aid. It is about demonstrating that, in the face of an equal (financial) investment, it is possible to propose dwellings of quality to low-income groups if one is able to move out of the norms that are supposed to provide this quality. (Dossier de presse, 2005)

The only exception to this rule are the resources in connection to the urban renewal program of the Grand Project de Ville for the existing Cité Ouvrière used for the PR of the project.

»Charismatic roles: Pierre Zemp and Jean Nouvel

Pierre Zemp was the director of the Somco since 1993, and was put in charge of the project (on his demand?) by the administration board of Somco. He is not an architect, his background is in law. From the material available one receives the impression that his role, even if behind the scenes, was fundamental for project, both as initiator and as the one who set up the vision that will guide the whole project, and fought for the project all along. His involvement is beyond the professional role, is personal, so much that he is even the one in charge of the site visits. When I contacted Somco in 2005 to visit the project, I was put through directly to him by the secretary and he personally guided the group of Viennese students through the site.
His is also the choice of the architects team, and in particularly the pivotal ability to convince to work on a project of this small scale and budget Jean Nouvel, an international star architect with the necessary charisma to push for innovation, to move 'things' within the team and to transport the project to the outside.

'Nouvel has played an important role in the whole history (of the project) because of his personality and his mediation capacity. The communication that has accompanied the project has contributed greatly to the realisation'(Jean Philippe Vassal in: Rouyer, 2006 , pg.341).

and:

'Jean Nouvel's press agent, Claudine Colin, also played a very important and critical part, partly telling him of the original commission, partly through the press campaign she designed and managed to spread news of the existence of the project far out in the provinces' (Gromark, 2008, p. 7).

»Required architects' skills

In the project setting the architects played a central role in the innovative perspective, as they had to find a different approach to solve what is a 'usual' problem. Their role corresponded to the traditional understanding within the profession of what design oriented architects do: find crea-

tive, out of the box design solutions. Yet they had to have as well specific skills both to cope with the collaborative set up of the process and to make sure that their proposal could match the strict budget requirements. The project was far away from a routine assignment, it required personal commitment beyond the fee, and enthusiasm.

'The starting point is a big free site (terrain libre) in the Cité Ouvrière. Mr Zemp had the idea to demonstrate what housing could be about, and develop a project that would refer to the spirit of these houses. We talked and this was in line with approaches for social housing that I had previously explored. And I told him that I found all this an excellent idea as long as long as it could demonstrate the difference in approaches. And different approaches emerge mostly with young architects' (Jean Nouvel, in Filion, 2009).

'I had the luck of meeting Jean Nouvel at the beginning, who made me understand that young architects would be more apt in developing this kind of discourse, but who also accepted to lend his fame to make out of this Cite Manifeste a success. (...) All the architects came with enthusiasm' (Pierre Zemp, in Filion, 2009).

The coordination role of the design team, held by Jean Paul Robert, is not documented.

Effectiveness of the innovation ideas and of their implementation

The project in itself offers in the various Îlots a palette of different kind and degrees of innovation, and corresponding different degrees of effectiveness of the various innovations realized. The project as a whole did achieve the objective of providing a different kind of housing within the standard financial constraints, yet with different results according to the various approaches, as shown in the following table.

Table IV.2.2
Comparison between construction costs variation per flat and additional surfaces

	Difference from aimed average construction cost per flat	**Additional surfaces** above standard flat sizes
Îlot 3- Lacaton Vassal	- 4%	from 37% to 85%
Îlot 2- Art'M Architecture	+ 4%	from 18% to 42%
Îlot 4 Duncan Lewis	+ 22%	from 15% to 35%
Îlot 5 Ban & De Gastines	+ 24%	from 13% to 37%
Îlot 1 Jean Nouvel AJN	+ 38%	from 27% to 148%

In the project of Lacaton Vassal, in front of a lower than expected budget per flat, the second highest range of additional surfaces is provide. In the project of Jean Nouvel, instead the additional surfaces implied an almost 40% rise of the expected budget.
Source: Bussemey and Buhe 2005

Fig. IV2.4: The original Cité Ouvrière. Source: Site visit 2005.

Fig. IV2.5: The project of Jean Nouvel Îlot 1. Source: Site visit 2005

Fig. IV2.6: The project of Art'M, Mathies Poitevin, Pascal Reynaud (Îlot 4) Source: Lisa-Schmidt Colinet 2009

Fig. IV2.7: The project of Duncan Lewis, Herve' Poitin+ Block-(Îlot 2) Source: Site visit 2005.

Fig. IV2.8: Lacaton Vassal (Îlot 3) Source: Lisa-Schmidt Colinet 2009

Fig. IV2.9: Lacaton Vassal (Îlot 3) Source: Site visit 2005

Fig. IV2.10: Interior of Îlot 4. Source: Boussemey and Buhe 2005 pp.109-110

Fig. IV2.11: Interior of Îlot 4. Source: Boussemey and Buhe 2005 pp.109-110

Fig. IV2.12 : Interior of Îlot 3
Appropriable winter-garden
Source: www.lacatonvassal.com

Fig. IV2.13: Interior of Îlot 4. Source: Boussemey and Buhe 2005 pp.109-110

Fig. IV2.14: Interior of Îlot 2. Source: Boussemey and Buhe 2005 pp.109-110

IV. CASE STUDIES

As the innovative core of this project is in the attributes of the final product, much of the effectiveness of the innovation has to do with users' reactions. Here a distinction between innovations concerning the typology of the dwelling, and thus its performance, and innovations concerning the aesthetics, and thus the idea of what a house should look like, is helpful, as the various combinations corresponded to different patterns of acceptance from the final users. More 'traditional' looking dwellings (such at the one of Îlot 2) were more easily accepted and had a lower refusal rate. For the most radical solution by Lacaton and Vassal there was a very high refusal rate, but as well a higher satisfaction in the use phase. In various degrees, all the dwellings challenged the users to move out of the traditional pattern of what a domestic space should look like:

'I let some people inside. After they are surprised, they say: One would not think that it is like this looking from outside. Once they have seen, they take a completely different view… My son in law told me: But the ceiling is not finished, and I told him that the architect said that it has to stay like this. He wanted to build a false ceiling, you know… But it does not shock me, it is beautiful like this. He said it looks unfinished, but I said it is good so. And you see, with the furniture inside you do not see the ceiling anymore. Now they say, it is true, it isn't shocking… ' Antoinette Wiss (70 years old?, living in Îlot 2).

'There are people where it wouldn't' work, you know, modern architecture. With friends, we warn them in advance, they are surprised. They are shocked by the building in front. We tell them that they are going to see an architecture a bit different from the one they are used to. For them a house is with walls, roof tiles, pitched roofs… These ones are houses, but… Here in front, you see, it is a horticultural greenhouse, but it is a house, it is very good. People are a bit in difficulties some time, but it is really nice' Arnaud Fougerolle (40 years old? Living in Îlot 5).

Yet the challenge goes well beyond the aesthetics. It is about how spaces function, the fact that there are zones instead of rooms, the fact that functions are not predefined:

'When we go there we see that for example the people have four or five tables in the same flat, and according to the day, depending if they feel happy or not, they use one place or another. For us it was this the idea of luxury, that is this comfort of space' (Anne Lacaton in Filion, 2009).

'There are no doors at all, and this is not necessarily obvious… Even if there are two storey, the older child sleeps…. It is very noisy (…), so we decided none the less to close off a small room because the family has developed and it was not manageable to live with a baby in a completely open space' Marie-Eve Beauclair (35 years old? Living in Îlot 3).

By accepting these challenges the users are able to profit from the freedom given by the extra space:

'Well, the kitchen is very very small, and in the kitchen that for definition is there to cook you have a window that is 40 cm times 40 cm…, but the rest is very good, you see, you have a gallery, it is nice. You see, I came from the countryside, and since I was a kid I always had tree houses with hanging mats, so it was logic! There was the possibility of a hanging mat, so we put one. And there are lot of things like this here… You do not have constraints, you do not have 2.5 meter high ceiling, you have the impression of freedom, there are big glass surfaces, it is nice. We have two daughters, so they got the rooms downstairs, with the bathroom, and we, well, where there was the office, we have squatted there and made our bedroom' Arnaud Fougerolle (40 years old? Living in Îlot 5).

Since the beginning of the use phase there is a sense that the general strategy of the project does work. A high investment in the flats (floors, partitions, curtains) and outer spaces (plants) from the tenants side is noted, they even organize a *fête de quartier* (Bussemey and Buhe, 2005, 112). The appropriation process of the users, wished by the architects, has started and appears to work, even if specific technical problems make some sectors more problematic than others.

Particularly successful is Îlot 3, possibly the most radical proposal both typologically and aesthetically, while both the projects of Jean Nouvel and Shigeru Ban require additional interventions (and this on top of the fact that they were actually more expensive), because of the heating costs in winter and/or overheating in the summer. This became apparent after the first year, when the tenants got the full bill for the year. The adopted solutions, while managing to reduce the heating costs, still did not solve the lack of ventilation and overheating (Miguet, 2009). Typological aspects of the projects such as generous floor areas, the big voids and the extended glass surfaces have had underestimated consequences for what concerns the technical aspects of the use.

The effectiveness of the innovation moves however beyond the users' acceptance. The analysis of the final users' showed in fact that they had specific characteristics in comparison to the average tenants of Somco. The project attracted a higher than usual number of refusals, a higher than usual number of young families, and finally a higher than usual investment connected to the appropriation of the spaces from the tenants' side was noted (Bussemey and Buhe 2005). It is reasonable to assume that this 'selection' was essentially steered by the characteristics of the 'atypical' architecture proposed, as the selection process was in essence done accordingly to the usual setting. According to Zemp, the final users were not lifted on the site from above, they actually had a connection with the inhabitants of the surroundings[1].Here lies an interesting hypothesis about the possibility of architecture to contribute to social regeneration processes, beyond gentrification: in the Cité Manifeste architecture played a special role, attracting a milieu different from the one of the surrounding in terms of age, structure and possibly expectations, and that this milieu, being different but as well connected, could effectively contribute to the wished for larger scale regeneration of the existing Cité Ouvrière on the longer term.

1 'The relation with the neighbors was very difficult at the beginning. We showed them the plans, there was a cry, one cannot build something like this here. Over time the people have become associated with the project, they have followed the construction site, and they have felt responsible. And in the end it was this group of traditional inhabitants who send us our tenants' (Zemp, site visit 2005). .

Barriers

As the project is transmitted as a success story, it is quite difficult ex-post to find out about the actual barriers the project encountered. For what concerns the vision for the project, both within the local politics and at national level it appears that the project did not receive specific support (see for example Gromark p.6), yet no specific barriers were set. The limited size of the project, as well as the fact that it referred to a standard procedure, was from this perspective possibly an advantage, as the project did not need exceptional political support.

Additional barriers to achieve innovation have been identified in the standard procedure used to the commission the architects, who were not put in charge of the complete executive design. This possibly led to big tensions among the architects in charge of the design, the office in charge of the execution, and the client in the execution phase (Bussemey and Buhe, 2005. p. 77).

Value chain

Who profited from the extra value produced by the innovative typological approaches at the core of the project? How was the extra value distributed among the actors? The success of the new typologies, with their additional surfaces, benefits directly the company who has achieved bigger flats within a standard budget, and the users to whom the company transfers the additional surfaces maintaining standard rents on the base of the rooms number and not square meters. Thanks to this transfer, the users enjoy a much higher use value, while the company however might in the end still have an additional profit, when looking at the real estate value of the property.

Additional hidden costs of producing such extra value should however be kept in mind. For example, additional time was required on the client side, in order to manage the budget and find companies willing to build within the standard financial frame. The project required additional time and additional resources also from the side of the architects, for example for the reworking of some of the proposals in order to match the budget, such as in the case of Lacaton Vassal. Yet the architects did not receive an special fee for this extra effort, nor the client did account for the additional manpower implied by the almost two years delay in the realization.

'The project that certainly demanded idealistic sacrifices by and commitment from the participating architects together with a participation to the cause. On top of that, in this economic context, they could not be fully compensated either and agreed to charge only modest fees and instead enjoy the extreme publicity event' (Pierre Zemp in Gromark 2008, p7).

For the architect, and possibly for Somco, it was possibly a matter of personal, idealistic involvement that could or could not in the end be compensated by the extreme media attention that the project received in terms of cultural capital. Somco, for example, does not seem to have had any interest in repeating an operation of this idealistic scale, and therefore hardly capitalized on the experience.

Diffusion

Disregarding the potential demonstrated in the project and the fact that the project enjoyed an international media success, there is no direct spin-off of the whole operation. It remained a one–off project for Somco, the push for innovation possibly limited to Pierre Zemp, and not really reflected in the whole organization.

Even in face of the success of the Lacaton and Vassal project, it has taken quite a lot of time to see a direct spin-off of this kind of design and material/ technology approach. Their housing housing in Trignac (23 units) was started in 2010 and isas per today (April 2013) not yet completed. The housing project in Saint-Nazaire (53 units) was built in 2011. They were both commissioned by Silene, a regional provider of subsidized housing who was interested in new forms of habitat.

Lessons learned

- Exceptional settings, in this case linked with architecture/ social history, can tap into a variety of additional resources of non monetary nature for the promotion of innovation (involvement of the actors, sense of making history …).
- Role of architecture can be pivotal in promoting change in the social structures of the users, beyond gentrification.
- Communication plays a relevant role to make people take an interest in atypical housing, there is a need to invest in it. As well, it makes sense to invest in the communication of further actors, such as contractors, residents of the surroundings.
- Small details can put potentially interesting innovations at risk of failing (see heating systems, or the kind of heating being chosen).
- Role of architectural competitions to produce innovative solutions should be questioned, as collaborative settings can produce a more fruitful exchange and better results.
- Unaccounted costs of innovating include both personal costs and professional ones from the side of the makers'. What about the users?
- Great difficulties to move beyond the one–off situation.

Open questions

Identify barriers to the approach proposed by Lacaton- Vassal.

FAMILINSTÈRE/ SOCIAL PALACE, GUISE, FRANCE, 1888

Number of units: 240 apartments (1859) for 800 people. Total complex aimed at housing 1500 to 2000 people

Typology: Multilevel housing with shared atria (Social Palace)

Tenure: Co-operative housing

Architecture: Jean Baptiste Godin (1817-1888)

Construction year: 1858- 1883

Developer: Jean Baptiste Godin

Funding: Jean Baptiste Godin

Fig. IV.3.1
View of the central pavilion from the access courtyard

Source www.wikicommons.org; by Velvet, April 2010

Rationale for selecting the case

Early prototype of vertically stacked collective housing.

Hypothesis

Flexibility and maximization make long-lasting, robust typologies.

Generous common spaces are difficult to manage on the long run and need to be revitalized over time..

Theoretical and policy relevance of the enquiry

Case of historical innovation

Storyline

1858: Inspired by the phalanstery idea developed by the social theorist Charles Fourier (1772-1837), the stove factory owner and self-made industrialist Godin starts the construction of the Familinstère in Guise (Northern France). His plan foresees 300 dwellings, divided in three blocks. Each block is four levels high and built around a generously dimensioned communal atrium covered by a glazed roof. A nursery, a school, a theatre and even a swimming pool are provided in the complex. The internal circulation is based on access balconies open to the atrium. Each flat is divided in two generous rooms, and adjacent flats can be joined together to house bigger families. Differently from the phalanstery, the factory is physically separated from the housing, and the church is replaced by a theatre. The planning of Godin is extremely meticulous and long lasting. ***1871:*** Godin publishes his book *Solutions sociales*. The fourth chapter is a detailed description of the building and functioning of the Familinstère. ***1886:*** The book is translated in English and published in New York. ***1887:*** Godin builds a second smaller Familinstère near Brussels. It will survive as housing co-operative until 1968, then used as offices and reconverted to collective housing after 1988. ***1888:*** At his death, Godin bequests the property of the factory and of the Familinstère to the association of the workers inhabitants (Association cooperative du Capital et du Travail). 1800 people lives in the 'Social Palace'. ***1918:*** Part of the building is destroyed during war. ***1960s***: The sales are low, the initial spirit of the co-operative is weakening, with much too low innovation and investments. ***1968:*** The factory has now gone public, and the multinational Le Creuset acquires the control. The housing is sold to a housing co-operative of users, definitively splitting it from the property of the factory. The common facilities are bought by the city. The sale for the singular dwellings places the maintenance of large common spaces under the responsibility of the new owners. The building increasingly runs down, because of the lack of resources for the maintenance. ***1988:*** The group Cheminées Philippe buys the factory and re-establishes the brand for high quality stoves. The factory still exists today and employs around 400 workers (www.chemineesgodin.com). ***1991:*** The building is put under heritage protection and a program of revitalization is but in place. ***2000:*** The city restores part of the

common facilities and makes of the central building a museum dedicated to utopia. The aim is to make of the Familinstère a cultural pole. The question is how to combine the 'normal' use of the dwellings with a museographic function. 700 people still live in the Familinstère. ***2010:*** Opening of the Museum mostly located in the central pavilion.

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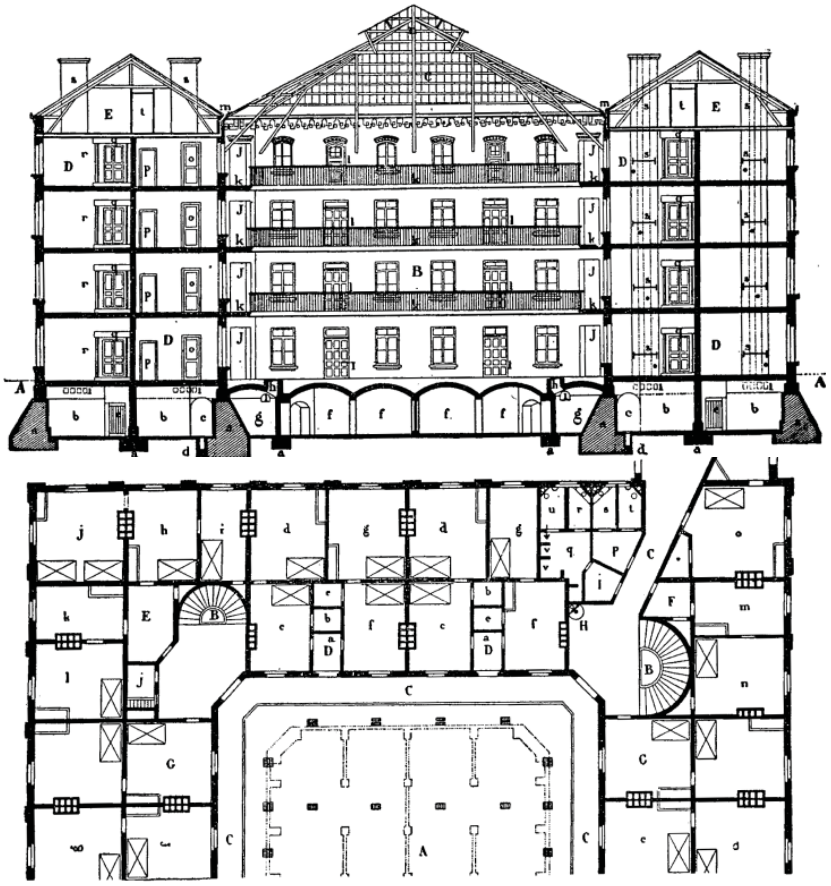

Fig. IV.3.2
Plan and Section
Source: Godin, 1886

Legend (bold not in the original version)
A: Basement, B. Innercourtyard, Groundfloor and upperfloors;
C. Glassroofing over courtyard and galleries; D: Interior of apartments;
E: Loft
D. Interior of apartments:
(o) entrance form corridor (p) larder and store cupboard (q) cupboard
(r) door set in wall, so that two apartments can easily be made into one if required
(s) airshaft in chimney of ventilation for each apartment

INNOVATION ANALYISIS

Level 1: Why / for whom

To create a new social order, sufficient quality of the living conditions are seen as a fundamental precondition by Godin, as by other social utopists. With the Familinstère, also called Social Palace, Godin attempts to build a 'social home' organized in conformity with what he considers the three Primordial Laws: 'the preservation and support of human life, the development and progress of human life, the equilibrium and harmony of human life'*(Godin 1886 p.222).* A series of necessary material and immaterial characteristics for the project are defined from these general laws, such as making light, space , pure air, hygiene accessible for all and providing security, solidarity and association among men (Godin 1886 pp. 222-223).

Godin's Social Palace is built in more phases over a period of 25 years. Once completed it will house up to 1500 people, without a hierarchy in terms of dwelling conditions. The users include also the most qualified employees, such as the factory's engineers, and Godin himself, whose first wife however refused to follow him there and left him.

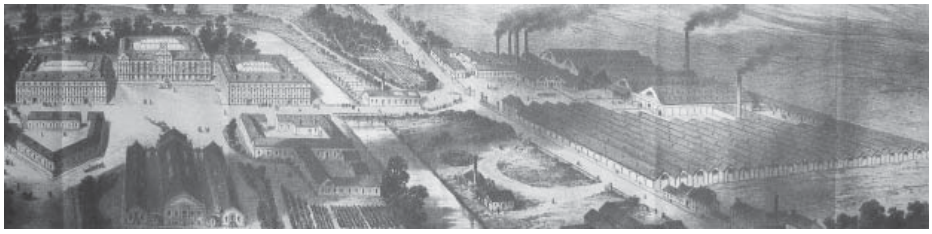

Fig. IV.3.3: Bird-eye view of the Familinstère and the factory, Source Godin 1886

Level 2: What innovation / Innovation concept

In Godin's thinking, architecture plays a decisive role in securing the necessary progress of the masses, by securing the well-being of the people:

'the architectural surroundings lead to a predetermined usage, and therefore to special results' (Godin 1886).

But to achieve a new social order, architecture needs to change as well. Godin's Social Palace is consequently conceived as a radically new machine for collective living, possibly inspired by the architecture of hospitals or even prisons. It is highly detailed in terms of technology, architecture and design and social engineering. Technical details include a natural ventilation system for the atria and the garbage chutes. Godin's attention to design focuses specifically on the needs of children: the folding doors of the building are designed so that children can easily open and close them, the school has furniture specifically designed in different sizes according to age, the stairs are semi-circulars, as to allow children to use the narrow steps on the inner end, and grown-ups the wider steps on the outer end.

The dwelling's layout is conceived according to strikingly contemporary flexibility criteria. The basic unit is composed by two connected rooms of approximately 20 square meters each, one facing the common atrium, one the outer facade. A service spine, along one of the partition walls, gives space to built-in wardrobes and storages, later transformable into washrooms. Both rooms are conceived so to allow at least two different positions for the bed and main furnishing, this being a criteria to measure flexibility still in use today. A connection between adjacent apartments is planned in from the beginning, to extend when needed the two rooms units to four or six rooms units. The layout caters for the cross–ventilation of the flats. The result is a very robust and adaptable floorplan, still working today, with most of the flats having four rooms.
In the initial concept Godin uses the architecture and the organization of the daily rhythm to allow forms of social control that in his view will encourage individual progress. The access balconies, with railings that cannot be climbed over, double their function both as individual balconies and observation points to control ('contemplate') the common space. The presence of the shops, selling useful items, is thought to 'lessen the temptations of the wine-house' and all unfruitful investments.

The familisteriens are part of a co-operative, the profits of the company are shared among them. The property of the building and of the factory is initially in Godin's hands. By 1880 the workers' saving on their share of the profits repay Godin of his initial investment. The co-operative becomes the owner of the factory and of the housing. Living in the Familinstère the workers gain access to decent housing and to a series of services such as a crèche, a school, a theatre, a gym and a swimming pool, and to reduced prices for goods, as these were bought directly by the co-operative and resold without additional profit.

According to Godin, the typological choice of a compact collective building ('unitary architecture' in his words) instead of single units was the most efficient solution to achieve reachable services to all the users. Therefore it was to be preferred to solutions such as the one of the Cités Ouvrières of Mulhouse, based on semi-detached housing typologies that implied much bigger distances between services and users. In Mulhouse the user have to buy in a let-buy system their dwellings, in Guise the collective- sharing dimension is also present in the financing model pursued by Godin. His idea was that the return of investment for the building should be limited to 4 to 5%, and that the profits beyond this percentage should be shared among the tenants according to their rent (Fay, 1913). The property is to stay in the hand of the workers' co-operative.

In a modern perspective, the Social Palace involved a combination of an innovative product (collective housing) and services. Its relevance reaches beyond the historical perspective, and fits in the notion of contemporary post-industrial innovations aimed at achieving a better social efficiency, and not at a higher profit. With its focus on achieving a maximum, it also represents an interesting counter example to the housing model based on the minimum proposed by Modernism.

Table IV.3.1
Social Palace compared to the Cités Ouvrières of Mulhouse
from Panni (2010), p. 33

	FAMILINSTÈRE	CITÉS OUVRIÈRES
Nr. of dwellings	240 apartments	752 units
Average net surface per dwelling	42 m^2	55 m^2 with 120m^2 garden
Nr. of Inhabitants (1867)	800	6000
Average nr. of people / unit	3.5	8
Total Costs	820 000 F	3 000 000 F
Construction costs per unit	3 420 F	3 999 F
Financing	*Fonderies et Manufactures Godin- Lemaire*	Somco, with support by the City of Mulhouse and central government
Legal status	Co-operative rental flats from 1880	Let to buy
Average rent	10 F/ month	25 F/ Month over 13 years

In the Social Palace, the property remains to the co-operative, while in Mulhouse the property is given to the end users. The costs per unit are comparable, while today in the European context collective compact typologies (what Godin named 'unitary architecture') are generally cheaper than individual housing , both in terms of building costs and running ones (see chapter 5).

Level 3: How was the innovation possible

Even if the Familinstère referred to a radical and utopian vision of social innovation, it was based on a very high level of pragmatism. Its aim was solidly anchored in reality, it was about realizing utopia, with a clear awareness that ideology alone is not enough. In Godin's words (1886):

'The rare attempts at social reform have so often lead to failures that social reformers are dismissed as dreamers. Perhaps the same is said of me. But I have been a man of action, I have made my thoughts reality, I have put them into practice before theorizing, I cannot be accused therefore of remaining in the realm of utopia.'

Next to the initial financial investments, the project found in Godin's pragmatic know- how a unique resource that made of this project a unique example of 'realized' utopia and of innovative collective housing.

Level 4: With which resources / With whom

What has made this project and its architecture last so long? Godin's skills were in the production of social appliances, and it is possible to see a link between his skills in design and detailing and his experiences in the design of high quality everyday life tools. In a contemporary perspective the robustness of his architecture is reflected in at least two strategies that Godin expressively se-

lected in his planning and contemporary architects still consider relevant. On one hand we have the maximizing of the space of the dwelling: Godin's dwellings were of extremely high standards and generously spaced. On the other the notion of flexibility and adaptability: Godin's rooms are conceived as to be used in at least two different ways, and the fact that dwellings can be easily joined together has allowed to easily reach contemporary dwelling standard sizes. Most modern examples of collective housing, instead, result today extremely small because of raised standards in terms of space.

It should not be forgotten that Godin followed a total vision of renovation, beyond just space. In the Familinstère education played an extremely relevant role as through the education it was possible to make people better. The school system of the Familinstère was different from the public one, with less holidays but yet a higher level.

Effectiveness and diffusion

Numerous attempts were made in the XIX century to realize a new kind of workers community along the ideas of Fourier especially in the United States. Differently from Godin's Social Palace, none did manage to survive long, or they did so only in a very limited scale. Both Familinstères managed instead 80 years of survival. The sense that the project reached beyond a physical building and to a form of long lasting collectivity could still be felt in 1999 in the interviews of some of the last users:

'Before, you knew everybody. Today not anymore. You cannot call this anymore a Familinstère. Now it will be become like everywhere else' (Mme Marchand, familistérienne, in Lambert 1999)

Or, concerning the revitalization:

'It is nonetheless a bit shameful that it is up to the others to come and make a project to revitalize the Familinstère. And not the familinsteriens that associate themselves to do it' (Mme Marchand, familistérienne, in Lambert 1999).

Fig. IV.3.4: M.me Marchand and M. Lemaire interviewed in their apartments, discussing the transformation of the Familinstère in a museum. Source: Lambert 1999

While the diffusion in terms of building was limited to the two examples built by Godin, a more large effect could be researched in typological term. Godin himself was involved in a project of a phalanstery in the States and the emergence of collective housing in America has in fact some links to the ideas of the Fourier .

Lessons learned

The project represents a useful example to investigate how forms of collective housing and living can evolve over time, as well as the role that architecture qualities such as maximizing strategies and adaptability play in guaranteeing robustness over time.

Open questions

Comparison between the results achieved over the long term by the Cités Ouvrière and the Familinstère.

Fig. IV.3.5: Reconstruction of apartment's interior.
Source: www.wikicommons..org

Fig. IV.3.6: Left wing still inhabited today.
Photo: Georges Fessy, 2003.
© Familistère de Guise

SHELF HOUSING - HAMBURG
BASIC BUILDING AND SETTLERS
GERMANY 2013

Number of units: variable, circa 1670 m2

Typology: Multi-level basic building structure and a kit of construction elements, for units self-building. Resulting dwelling size varies from 30 to 120 m2.

Tenure: Ownership and rental

Architecture: Bel Sozietät für Architektur Köln, Jörge Leeser und Anne-Julchen Bernhardt

Construction year: 2013

Developer : Primus developments GsmbH

Funding: IBA Hamburg for competition, design development, PR and subsidies for special elements in the building. Private developer for the building

Fig. IV.4.1
Shelf Housing under construction, February 2013.
Source IBA-Kunz

Rationale for selecting the case

Example of radical revision of the building process

Hypothesis

New relevance of the open building concept (infrastructure+ infill) by the Dutch architect Habrakan in the sixties. Can it be made to work now? What has changed?

As the product on offer does not yet look like a 'normal' flat, the model is interesting only for certain milieus (creative, etc.), not for all low-income groups, unless specific support is offered to them.

Theoretical and policy relevance of the enquiry

The project delivers to the users an unfinished product and let them finish it. This is usually not considered acceptable by many institutions providing housing subsidies. The project challenges the usual development practice, as it opens up the need for flexibility in the building permissions (the final design is left open) and for the consequent subdivision of the property among the users.

Storyline

April 2006: IBA Hamburg is launched. ***Autumn 2006:*** IBA Hamburg GmbH begins work in a commercial centre in Wilhelmsburg. ***2007:*** Official start of the Hamburg's Bauausstellung IBA Hamburg, following a relevant German tradition for these exhibitions to focus on societal transformations, starting from the Weissenhof directed by Mies van der Rohe in 1927. IBA Hamburg focuses on the changes of the post-industrial and multi-ethnic city and on the new possibilities of clean energy provision for urban settlements. The selected locations are the areas of Wilhelmsburg, Veddel and the Hamburg's inner harbour, on the river island on the Elbe. A pivotal issue for the requalification of the selected sites is the relocation of an important traffic axes that had been cutting the area in separated parts A specific section is conceived as an 'exhibition within the exhibition' (*Bauausstellung in der Bauausstellung*): a series of mostly experimental housing projects, conceived in line with the traditional idea of a Bauausstellung, where an ensemble of buildings should function as trendsetter and impulse for the necessary cultural, urban and landscape transformations of the city. The aim is to achieve Case Study Houses for the 21st century. ***2008:*** The cooperation by the established masterplanning and architecture office Jo Coenen & Co. architects (Netherlands) and the landscape architects agence ter Landschaftsarchitekten (France, Germany) wins the commission for the masterplan of New Willemsburg Central, following a workshop with five other invited offices. The proposal is selected unanimously. It is conceived to function with or without the relocation of the important traffic axes of the Reichsstrasse, a decision that had at the time yet to be confirmed. ***2009:*** The brief for the open international competition 'Smart Price Housing' is published, calling for teams of architects in cooperation with developers, prefabrication companies or investors, whereby these could be also selected in a second phase. The competition requires a prequalification, based on reference

projects and a concept for the submission. The language of the competition is German. Six international teams are selected as fix starters: Kaufmann / Rüf, (Austria) Adjaye Associates (United Kingdom), Gramazio Kohler (Switzerland) Shigeru Ban, (Japan). All teams interested in the competition are invited to participate in the international workshop Smart Price Houses, set up by IBA Hamburg in collaboration with the German architecture magazine ARCH+, to discuss the possibilities and future perspectives of affordable housing. The invited contributors include experts from the field of architecture, planning, research, building industry. The results of the workshop constitute then the basis for the competition. Out of the applications, twelve interdisciplinary teams get selected for the second phase. ***March 2010:*** The second phase results in the selection of six projects in the category Smart Price Housing for the original three sites. The projects by Adjaye Associates (London) and the Berliner Institut für urbanen Holzbau (IfuH) are based on modular use of massive wood elements. Fusi & Ammann Architekten developed a loft system with the producer of prefabricated houses Schwörer Haus KG (Hamburg). Because of their experimental approach, the projects of the Cologne based office Büros BeL Sozietät für Architektur and of the Austrian x architekten are additionally selected to further compete on the same site (with a special prize) . Both projects developed a participatory approach, integrating a self-build phase. On the base of the next design development phase, one of the project is to be selected for realization. A further project by the Berlin office Kaden & Klingbeil, based on a modular wooden structure and a self-build phase , is selected as reserve, in case one of the other projects does not find the necessary financial backing. Investors can decide to exchange one of the projects selected by the jury with one of the reserves. ***Summer 2010:*** IBA Hamburg publishes a brochure and organizes a fair for all the Case Study houses, in order to attract possible investors and developers. The project of BeL does not find a investor/developer. The head of IBA steps in, and establishes a contact to Achim Nagel of PRIMUS developments, a developer who had previously worked as an architect and that usually operated in other market segments. After deciding to join the project, Nagel organizes the contacts with an interested do-it- yourself store (HAGEBAU) who will provide the required building elements to the settlers. ***2011:*** The projects selected for realization in the category Smart Price Housing are by Adjaye Associates, London, Fusi & Ammann Architekten, Hamburg and BeL Sozietät für Architektur, Köln, to be completed by 2013. An additional project, by the Hamburg-based developer Engel & Völkers is added to the three projects selected through the competition. Construction starts. ***Autumn 2012:*** Opening of the Grundbau by BeL, and handing over the settlers. Most of the settlers are selected (12 parties), even if the contract is still not finalized. The settlement phase can now start. One floor remains reserved for rental flats, and the tenancy agreements are still not ready. The plan is to start with the second phase for this level later, so to fulfill the requirement that construction is not yet finished during the IBA opening time. ***2013:*** Expected completion of the project (all but one floor), in order to coincide with the IBA opening.

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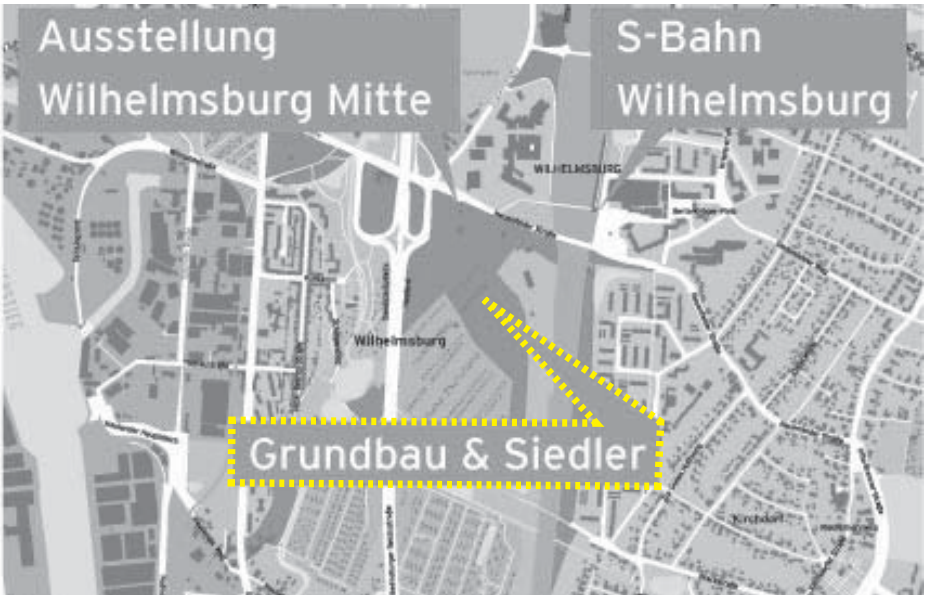


Fig.IV.4.2
Location
Source IBA

INNOVATION ANALYSIS

Layer 1: Why / for whom

» Between show and affordable housing

The project experimental nature is reflected in the general aims of the Internationale Bauausstellung IBA Hamburg, that searched housing solutions for the 21st century, along the general themes of cosmopolis, metrozones and climate change. The specific housing focus of the IBA is set on the themes of pluri-functionality (hybrid housing), affordability (smart-price housing, to which the case belongs) and technological advancements (smart materials housing). The housing projects, conceived as an exhibition in the exhibition, are located in Willemsburg Central, one the biggest river island in Europe. Through exemplary projects, IBA wants to achieve new housing standards that will requalify the run down area, making it the most innovative new built quarter in Europe.

Within the smart-price housing category, the project of Anne-Julchen Bernhardt and Jörg Leeser, together BeL Sozietät. für Architektur Cologne, proposes a self-building phase to conclude the construction process, on the base of a set of given elements. The results are thought to be two-folded. The activation of the users in the construction phase will reduce the costs of the housing, providing access to affordable housing to low-income groups. Simultaneously, the project will be highly customisable, in the initial construction phase and in the use phase, thus providing long-term adaptability to the dwellings.

Layer 2: What innovation / Innovation concept

The main idea is to provide the users a basic multilevel structure (Grundbau), instead of a finished building. The users - called settlers - will build the actual dwelling on their own, making use of a set of pre-selected elements, and therefore reduce the amount of financial resources required. The construction materials are to be provided by a do-it-yourself store (in this case HAGE BAU) and can be assembled on site by the users themselves. A manual compiled by the architects explains how to 'plan' and build the house. The settlers are thus handed over not a finished flat, but a part of a basic structure, with access to the necessary installations for sewage and electricity. To make the basic structure safe for use during the self build phase, a rail is also provided. In the ground floor storages and parking are foreseen, that can serve as workshops/tool storage during the construction phase and could possibly develop in a kind of collective space.

In the moment in which the basic structure is handed over to the users, the final plans are already been fixed through a series of workshops between users and architects. The decisions of the users involved both their part of the facade and the floorplan. The possibility of future changes is however catered for in the planning:

'the ground layout of the installations is neutral, as we have anticipated that people will change their layout over time' (Leeser, interview).

The apparent easiness of the innovation proposed by BeL is misleading: their proposal actually represents a radical rethinking of the standard process through which collective housing is delivered. ***The essence of the project lies in what Jörg Leeser defines the 'economic model'[1] behind it, not in the architecture***.

The project is about shifting roles, and responsibilities from the producers (planner and developers) to the users, by proposing a new definition of ownership in multilevel housing. It combines the know-how of the professional actors with the possibility of individual acting. In this case the users are de facto buying or renting a kind of 'artificial ground', pre-produced by the developer with his/ her architect, and are thus in charge of the realization of their own dwelling. They can therefore harvest the advantage of collective housing (efficient use of the ground, cheaper) and the ones of single family housing (possibility of phasing construction over time, self-building, personalized planning). The result is a hybrid between standard ready made collective housing, professionally delivered with preliminary bulk investment, and a Baugruppe where a group of users organize the whole financing, planning and construction themselves. Ultimately, the locus of the innovation lies in the link between the proposed economical and the proposed architectural model.

1 Possibly a more appropriate term- also with reference to innovation theory could be 'business model'.

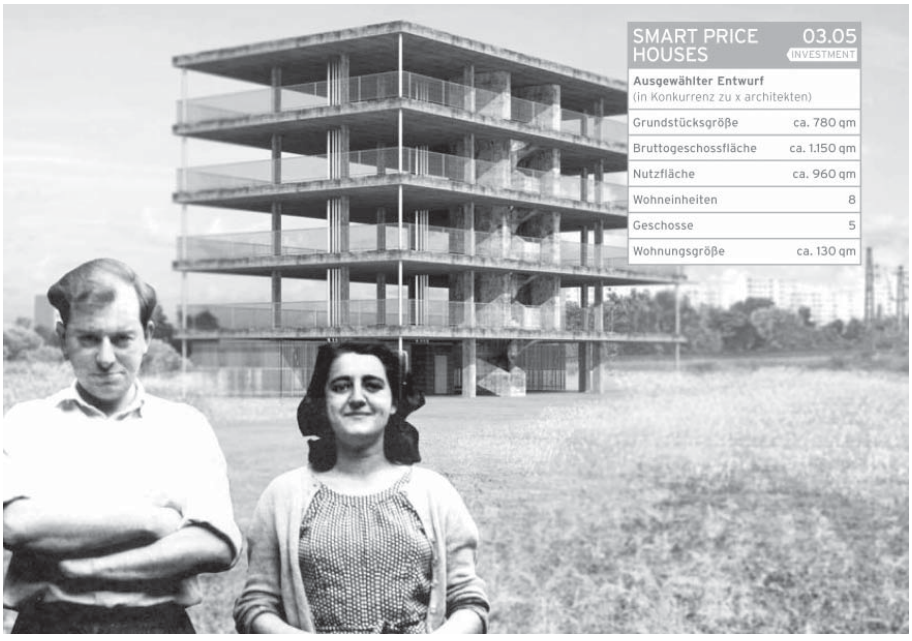


Fig. IV.4.3
Presentation of the project to the investor
Source: IBA *Investorenbroschüre* 2010

Layer 3: How was the innovation possible

The project was born out of an open call for innovative housing approaches, and initially developed according the guidelines set up by IBA . To combine innovative with 'realistic' approaches for housing, IBA devised a specific process. Following an initial open call for innovative housing concepts along the three pre-selected themes (water, hybrid and smart-price houses), up to 15 teams/ projects were selected per theme. In the second phase the selected proposals were further developed by the architects, with the exception of the smart price houses, where the developer was involved already. For the other categories it is in the third phase that the concept is offered together with a site to developers/ investors. In some cases there were for a given site two or more alternative concepts, and the investor could chose the one to work with.

In this case the process designed by IBA is not enough, and the personal involvement of the head of IBA is needed to establish the connection between the project and the developer. This need for an extra effort is linked to the radical aspects of the project, as it invalidates relevant usual set ups and routines on the developer side (as well as on the architects and user side). The effects of this changed economical model are wide reaching. New specific approaches in terms of design strategies, roles in the process and legal issues were developed beyond the initial IBA's set up in order to make the project work.

If the basic structure remains fully controlled by the architect, the rest is designed as an open system where users plan and build their customized spaces. This part of the design takes the form of an instructions manual, defining the elements (such as walls, windows, doors, sunscreens) that can be combined according to individual wishes and needs. In order to make the project work, the architect developed a specific detailing strategy, concentrating complex details in the first phase in order to simplify the detail in the settlement phase:

'We needed to reduce the amount and depth of details left to the settlers, but this means that a lot needs to be preconfigured in the basic structure' (Leeser, interview 2012).

The process included a specific effort to coordinate and support the settlers while producing their plans for the dwellings and facade, but also concerning technical and social issues. Workshops were organized with the architect to develop the floorplans and a collaboration had to be set up between the developer and the do-it yourself store, who agreed to deliver the materials on site according to the orders of the singular users. The developer, with the help of the architect, maintains the central coordination of the project and provides support for financing, planning and technical issues. Further technical support is provided by the do-it yourself store.

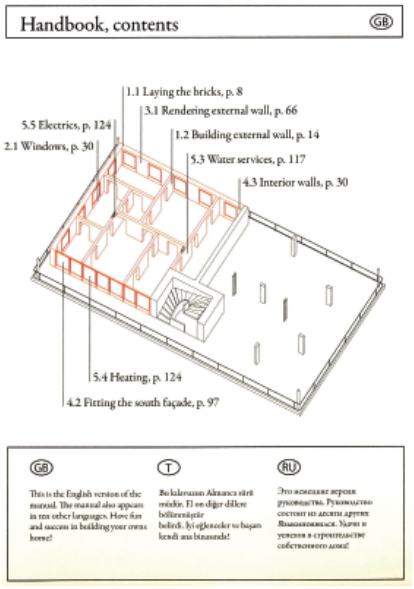
The selection of the users was not anymore the result of a first-come, first-serve policy. The project was made public through the IBA's channel, and some further specific media (interview with the architect on the radio, and presence on the website of the city of Hamburg for cooperative).

As the users were supposed to play an active role in the project, they needed to be selected according to more complex criteria than their financial means. They were judged in terms of technical capacities and possibly soft skills required in a collaborative decision process as the one foreseen in this case. This selection was done by the developer in consultation with the architects:

'The settlers were selected by the developer, who on the other hand asked for our opinion. The criteria of the developer included financial trustworthiness, and their expected financial capacities. But he also looked at whether they would 'fit' into the project, if they had some experience in craftsmanship, and how they would deal with their neighbour' (Leeser, interview 2012).

In order to make the project work, the developer needed to set up a specific contract for selling this project to the settlers, stipulating conditions such as the access to the ordering and delivery services of HAGEBAU for the materials and other mutual obligations. A law master-student took part in the project and wrote her master thesis about the legal issues deriving from the project. Very specific legal implications had to to be considered for the rental option, where tenants and not owners are contributing to the construction. This represents a further challenge, also because of the risks of construction accidents that might involve them.

While the planning authorities were well aware that the project at the stage for planning permission was not intended for realization, they suggested to follow a normal procedure and to ask for a revision of the permission plans once the settlers had decided. This choice, however, required not only the architectural plan, but also all the other required calculations, to be produced twice, once for the initial planning application - made on the basis of an hypothetical layout- and then again for the settlement phase, on the basis of the final layout according to the settlers' design.



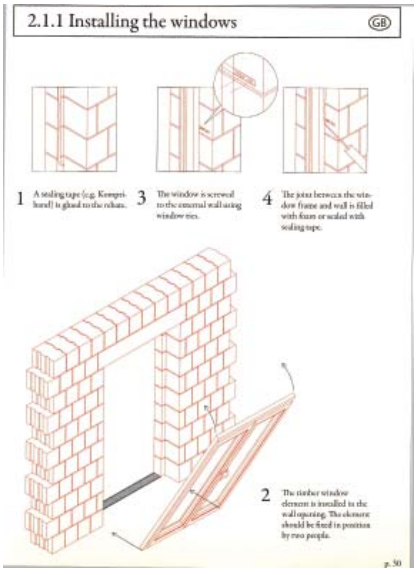


Fig. IV.4.4
Sample pages from the handbook
Source: Bernhardt and Leeser 2010

Layer 4: With which resources / With whom

The specific set-up of the project, out of the IBA quest for innovative approaches, represents a multidimensional resource, involving both potential cultural capital as well as out of the ordinary financial resources for all of the involved actors. The actors analysed (thus not including the settlers) all showed specific personal involvement in the project that can be possibly linked to the prestige resulting from taking part in such an event. Yet also the innovative approach of the project itself represented a resource, as it a potential beyond the one off realization:

'IBA organized a developer fair, where they introduced all the projects to Hamburg's developers. This was in our case not successful, as this project is the worst project a developer can imagine. Then the head of IBA reintroduced us to a developer we already knew, so we started discussing, and he finally took the risk to do this project (…) He did not jump on the train immediately, he needed some convincing. The most important reason for him was the economic model we developed' (Leeser, interview 2012).

'We have already been discussing with the developer about building a second Grundbau-Siedeln house in East Germany' (Leeser, interview 2012).

This project heavily depended on the willingness of the developer to experiment and share the vision of the architects. The man contacted by the head of IBA was a newcomer in this market segment. An educated architect with previous relevant working experience as such, he had been active in the segment of high end office and residential as a developer, including the head office for XELLA in Duisburg. Potentially, there is a link between his experience in delivering office spaces and the proposal of BeL. Differently from dwellings, office spaces are often delivered as neutral not partitioned spaces, with installations, so that users come in and adapt them to their needs. A kind of basic structure as well, in a way. The role of the developer in the project is fundamental for the implementation the innovative concept of BeL. What was an idea with him becomes reality:

'He got really fascinated by that model. Because of his network, he managed to find very quickly a partner for the material and distribution. The store is HAGE BAU. It is a chain: Xella provides most of the building materials, and HAGE Bau, one of their larger customers, will provide the material on site'(Leeser, interview 2012).

In the project the architect played a fundamental role for what concerns the definition of the innovative aspects, moving well beyond traditional architectural competences of design (but including them as well). He has both to strategically reconfigure its design in order to fit the possibilities of the two phases, but also bring in a lot of communication skills, linking a variety of different actors, their specific interests and communication cultures.

'You need to acquire systematic competences that incorporate a lot of communicative and strategic skills on how to organize things that so far you haven't met yet. The negotiation between industry partners is something completely different than between settlers' (Leeser, interview 2012).

According to the architect, Xella and Hagebau have been in a rather comfortable position, as their risk was limited to some new services that are part of the project. Their interest was to gain access to a new segment of the market (inner city home ownership market). The difference for them was the fact that the building acts a single customer, but it consists of twelve different customers. Logistically it is not as easy for them as to deal with a single customer or a large company.

Because of being part of the IBA, the project had access to special funding that covered extra costs involved. These included costs directly connected to the innovative approach, as well as other costs connected to the bad ground of the site. The site was in fact sold to the developer, and the fact that IBA paid for the difficult foundations , made the total prize of the site 'reasonable' (Leeser, interview). The additional costs derived from the experimental approach were evaluated on the basis of a list provided by the architect and developer .

'The GRUNDBAU was considered a normal concrete structure, and therefore did not receive any extra subsidy. But we needed an extra floor package to integrate the installations to be done by the settlers. We also needed a heavy duty elevator, as it is to transport not only people but also building materials. In the end there were quite a few items that got subsidized. They paid only the 'extra' costs such as the difference in cost between a normal lift and the goods lift, not the whole goods lift' (Leeser, interview 2012).

The architect estimated an even distribution of the subsidies among the two parts/ phases of the building. IBA also considered extra planning costs as experimental and awarded subsidies for additional coordination work required both by the architect and developer. The additional costs amounted to approximately 20 % of the total, yet the amount is also due to the fact that it was a first time, a prototype.

Effectiveness

The project was understood both by the architects as by the developer as a prototype. Not all conditions were 'ideal', which meant that some of the initial objectives were partly missed out in this first try. While it was not a problem to find interested buyers, the project did not manage to reach out to lower income groups.

'We aimed the project at people with a little capital, to give them the possibility to acquire real estate. But Hamburg is a very rich city, with extremely high real estate prices and as a matter of fact the people that were actually interested in our project are not really middle class, but above

the people we were actually aiming at. They are wealthier. They are not rich, they come from different backgrounds, some with an academic background, some with a craftsman background. It is an interesting mix' (Leeser, interview 2012).

This shift can also be linked to hard facts. The initial aim in the competition is to achieve a 40% price reduction in comparison to current market prices; the revised aim in July 2012 is 15%. And at the moment housing demand is high in Hamburg, which makes it easy to market unusual dwellings. Yet other issues, linked to some kind of architectural idealism, might play a role. According to the architecture critic Oliver Elser, in this project users will participate as 'creative subjects', taking joyfully over the do-it-yourself task, a trend that is anyway shown when they on Saturday come back home with full loaded cars from the 'Baumarkt' (Elser, 2011). In this idyllic vision lies however a difficult implication: low-income users will be able to accept a radically redefined product that does not correspond to 'normal' expectations about what a dwelling is about. Elser, and possibly the initial approach of the architects themselves, imply instead that the same value approach that guides the Saturday shopping at the 'Baumarkt '(do-it-yourself store) can directly apply to the process of acquiring a dwelling. The development of the project showed that the need for normality is a relevant priority, especially for what concerns the exteriors. The settlers renounced to the possibility of creating their own facade, and gave back the control of it to the architect.

'We always expected the settlers to be very creative with their own facades. But in the settlers' meeting they all agreed to have us- the architects- to design a common facade. They did not want to express individualism in their facade, we then developed a set of elements that they could use such as wind and sun screens,... (Leeser, interview 2012).

Is the frame of the Bauausstellung potent enough to master the mechanism of providing an acceptable radical model for real low-income users, and not only a theoretical approach not able to indent the aimed at reality? The answer here is no, better said not yet. While talking to the architects, there is a strong sense that this project is thought as a first prototype, and that the full potential has not yet been achieved. Part of the potential lies in raising the efficiency of the process. Some of the additional planning costs, such as the preparation of the handbook, could be reduced, once the system is established. As well, a more efficient procedure for building applications could be developed, especially regarding the regulations for acoustic and energy consumption:

'These calculations are part of the permit application, so we had to do these calculations beforehand. The first calculations were done on the basis of the sample plan, and now a second round of calculations is needed, with the exception of the structural ones. The installations also require an update, because of the change in the floorplans' (Leeser, interview 2012).

But to better reach the low-income users group, other aspects need to be integrated. A 'better' chosen site could help to move out of speculative set-ups such as the Hamburg's one, as location is a fundamental criteria not only for the choice of developers, but also for the choice of the users. A second fundamental issue is the financing model. The project was difficult to finance, also for the developer. The idea that expectation that the do it yourself superstore would actually finance the settler, and give them a loan on the materials, to be paid back monthly did not take off the ground. A creative financial partner on the banking side could give – as suggested by Leeser - a fundamental contribution to achieving users' groups usually left-out from this market segment.

Diffusion

The project shows a potential for diffusion, also because of the positive involvement of various actors beyond the team. Two lines of development emerged:

- Geographic diffusion: potential for areas where the potential of affordability could be a key factor (see East Germany).
- Rental housing The idea of testing the model for rental housing, proposed by the developer, is very interesting because it would significantly reduce the housing costs thanks to the self-build component, or raise the level of quality thanks to its customization potential.

The issue of copyright has not yet been approached until the moment of this analysis, and no copyright clause was part of the contract between the architect and the developer (possibly indicating that the copyright of the idea lies by the architect). The architect suggested that an open source would not be a problem.

Lessons learned

The idea has many references. Next to the references mentioned by the architects (self-build projects in general, the Tiergarten project by Frei Otto, Ottokahr Uhl in Austria), the model developed by Habraken in the '60s shows strong similarities, also in the idea of how the infill could be delivered. Yet the contemporary approach relies on a different ideological basis. The emphasis on community building has shifted, the aims of the users, and by reflection the one of the developer's side, are much more pragmatic. Community efforts are there, but in a low-key level, for example in form of exchange between users' know-how in carpentry and electrical installations. In the understanding of the architect, it is about solving everyday–life needs and not about fulfilling a political and/or sociological idealism. In this perspective fits as well the renunciation by the users to design their own individual façade.More generally, this project represents an interesting case where innovation moved beyond architecture and yet the architects played a central role, as they managed to combine design skills with the conception of a new strategis business model and the communication skills needed to develop a change in the system of how building is usually delivered.

Open questions

What skills do architect need to contribute to innovation, once they move beyond the product to a combination of product and services

WESTFERRY STUDIOS, LONDON UNITED KINGDOM 1999

Number of units: 9 dedicated commercial units 27 live/work units (18 units at 72 $m^2$and 9 bigger ones) 12 parking places

Typology: 4 storey building with access balcony.

Tenure: Mix of commercial and subsidized rental (initially for all the live/work units, in the second phase for approximately 50% of them)

Architecture: CZWG, www.czwg.com

Completion: 1999

Developer : Peabody Trust

Funding: Privately by the Peabody Trust, to whom the site was donated by the former London Docklands Development Corporation (LDDC). A partnership with East London Small Business Centre (ELSBC) provided business support for the subsidized live/work tenants, including access to start-up loans

Development costs: £3,450,000 (presumably including fees)

Fig. IV.5.1
Westferry studios: view of the access gate and courtyard

Fig. IV.5.2
Location

Rationale for selecting the case

First UK live/work development by a housing association, aimed at providing affordable spaces for start-ups

Hypothesis

The proposed innovation here is a new combination of product (the units) and services (the attribution system on the base of a business plan). The case provides relevant know- how about the effectiveness, barriers and potential of live/work concepts.

Theoretical and policy relevance of the enquiry

Relevant experience for the employment and regeneration potential of these kind of schemes, contributing important know how for planning policy issues connected to the live/work debate (especially issues concerning the need of specific use-classes).

Storyline

1862: Funding of the Peabody Trust (initially named Peabody Donation Fund) by the American banker, diplomat and philanthropist George Peabody. Its aim is help the poor and needy in London, and the focus are the housing conditions. Since 1864 the Trust has been building and more recently acquiring housing in various parts of London. It owns today approximately 20,000 units and provides housing to nearly 50,000 people. ***1988 onwards:*** Under the lead of Dickon Robinson and a new board, Peabody set up a series of innovative housing projects, such as the experimental first zero-energy housing development in UK, Bedzed. The new vision about the role of the Trust is the provision of rented housing for people unable to afford to rent or buy in the open market (including key workers), as well as supported housing, low cost home ownership, and community regeneration activities. At the same time live/work schemes have a slow start in the UK with a few schemes being proposed, sometimes described as 'atelier' units. The concept is initially welcomed by planners because of its potential of meeting both employment and housing objectives. Developers see it as a means of securing planning permission in areas where existing zonings made development difficult. ***Late 1990s***: At the end of the 1990s London is experiencing a period of intense housing development, spurred by a shortage of properties. A number high profile live work schemes are proposed as part of regeneration projects. At the same time an explosion in speculative 'live/work' proposals takes advantage of out-of-date policy frameworks that did not properly deal with mixed-use and/or live/work proposals. ***1996-97:*** The Peabody Trust initiates possibly the first official UK live/work development. The selected location is in Poplar, East London, facing the Docklands Light Railway station of Westferry. Approximately one third of the site will be used for the live/work project, while the other two thirds will be a residential development. The London based office CZWG is put in charge of the design. To reduce construction costs and maximise flexibility, the Peabody Trust gives a low-specification brief for minimally designed shells. ***1999:*** Completion of the project.

The design strategy includes marking the presence of the building through 9m high, light cream brick over dimensional text ('supergraphics') on the street elevation. 18 units are left as single space shells of different dimensions, with a fitted bathroom, power points, lighting and central heating, nine provide distinct living and working areas. The room heights and the windows are generously dimensioned. Specific care is given to goods delivery at all levels (appropriate lift and double doors at entrances, delivery zone in the courtyard) as well as sound insulation between units (to minimise the potential conflicts of living and working at the same time). The tenants are selected on the basis of a business plan and have access to a subsidized rent for the first five year of the tenancy, increasing every year so to reach market level at the end of the period. The Trust receives more than 1,100 applications, yet the majority do not fit into the criteria that include both low income and a sound business proposal. ***After 2003:*** Evolve, an agency for property management and marketing services for the creative industries, is asked by the Peabody Trust to re-brand the studios and market part of it at commercial rate to achieve a 50/50 split with the subsidized rents. Today only part of the units are let at a subsidized rate, while the rest is part of the commercial properties managed by the Peabody Trust. The reason for this restructuring was the need to produce a 8% return of investment.

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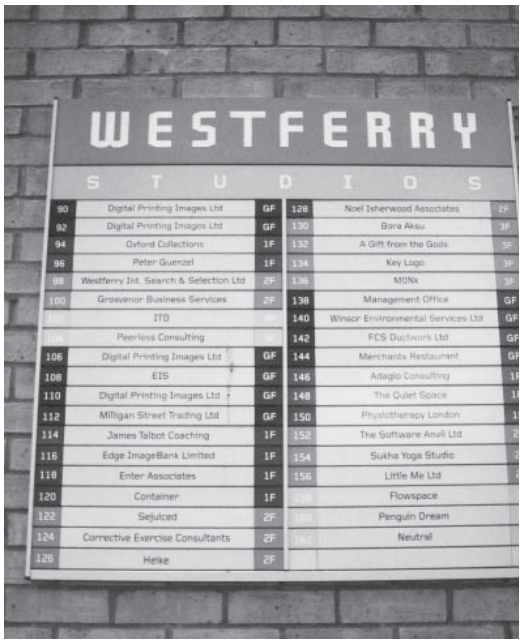

Fig. IV.5.3
Tenants board in 2005
A mix of ‚standard' businesses (such as a printing company or a recruitment one) and creative service providers (visualizations, architects, graphic designers)

Fig. IV.5.4 and 5.5
'Supergraphics' mark the building.

INNOVATION ANALYSIS

Layer 1: Why / for whom

Westferry Studios was a pilot project set up by the Peabody Trust, whose existing commercial portfolio was based on retail in connection with residential projects. This project followed a new commitment by the Trust to provide business opportunities for actors not having full access to the commercial market, and so contribute to the London economy. The principal aim was to provide a combination of affordable working and/ or living space, as alternative the high property costs in central London.

In comparison to other live/work examples, the project has a strong and innovative focus on the work aspect. The users, selected on the basis of a business plan, are businesses ready to start or recently started. They have access to a subsidized rent over the first five years, with a decreasing subsidy from year to year so to reach market level at the end of the period. This selection procedure favours small companies at the beginning of their development, and ensures that the beneficiaries of the project are self-employed or employers, but not employees.

The users were free to use the space as an apartment, as an office or as a combination of both, even if they had initially agreed to prioritise the work function in their unit. They profited financially from the possibility of running one property instead of two and in terms of time investment, as they could avoid lengthy and stressful commuting. Because of the strict Charity Commission rule in place at the time of the project, the initial residents were not required a collateral and had initially to earn under £16,000/year. As the work use is officially recognized, neighbours cannot not complain about a non-residential use in the building and a variety of business types (including light manufacturing) could find here their location.

In the urban perspective, the project was seen both from the Peabody Trust and from the LDDC as part of a regeneration strategy for the neighbourhood, because of its employment potential and the possibility of fostering a small creative community. The project was essentially conceived as an employment initiative, the residential purpose being a by-product of the aim of supporting small business start-ups. The project should thus be described as work live and not viceversa.

'I run an office together with another girl. We are illustrators and designers, some crossover thing. When we started working together three years ago, we heard about the scheme and we were looking for a studio. So we applied through the East London Small Business Center. The way it works is that you meet with a business counselor, they help you to write a business plan, and it is was quite a long process.(...) With that business plan, they referred us to the Peabody Trust, after they approved it and then you get these units at a subsidized rate for 5 years. The idea is that they help you starting and that you should be earning more money each year and at the end you can either leave or you start to pay market price.' Luise, 2005

Layer 2: What innovation / Innovation concept

The singular components of the project are relatively standard taken on their own. The innovative core lies in the combination of specifically designed units and the services connected to the selection and support of the users.

The essential element for the architecture of the spaces is neutrality, as it should allow a wide variety of uses, from a mix of live and work, to a work only or live only use. This was reflected in the typological characteristics of most of the units (big high spaces with big windows) and in the shell delivery (brick surfaces, unfinished MDF flooring, etc.), thought to allow users to adapt the units to its specific needs. A specific commercial use is only foreseen in the ground floor, while the bigger units on the top level with a full double height have separated live and work zone. Additionally, two units are let together with living units located in the adjacent residential part of the development.

The services offered to the users include a business consultant, helping the potential tenants with business related issues and running monthly advice sessions. As the tenants were in most cases at the beginning of their business career, they required high level of support, both initially and further on, as businesses slowed down because of the recession. The three-year business plan was in itself a very demanding pre-condition that required much help, as it had to fulfil the checklist of the East London Small Business Centre and included more than 40 items, such as cash flow forecasts, description of competitive edge, SWOT analysis, and so on, requiring sometimes many months to be completed by the inexperienced tenants.

From the point of view of the users, the novelty laid not so much in the combination of living and working together, as this was possible also somewhere else, but in the fact that in Westferry there was a specific provision for the dual use, reflected as well in a series of architectural details such as bigger door openings, enhanced load bearing floors (fulfilling light industrial use requirements), integrated goods and persons lift. Differently from when they were working from their bedrooms, they had however to deal with items connected to the work aspects of their letting, such as commercial clauses in their tenancy agreement, and business rates in their taxes.

The project was developed as pilot project, and was subject to an evaluation by the Live/work Network, an organization established with the aim of informing about and promoting this kind of schemes.

Layer 3: How was the innovation possible

»Unclear regulatory frameworks

Because of the novelty of proposing for this scheme a dual use in one unit (work and live), the project had to set new ground on various levels, which however did not stop the project from happening. A contributing factor was the flexibility that Peabody had in setting the focus of the scheme and its willingness to charter unknown ground both for the organization and the relevant regulatory frameworks.

From the side of the planning authorities, there was concern about how to control the live/work mix and make sure that the scheme was not a means around planning control, and would then revert to predominantly or solely residential. This is a well known pattern in London and UK that has restraint the interest of many local authorities towards such schemes. The site had originally foreseen a residential use, so there was no issue about loosing existing employment. Yet it was important that Peabody could assume the responsibility to avoid residential reversion in the project, and that a business consultant was involved (Dwelly 2003, p.27). The use class was commercial for the ground floor and office (work/live) for the studios.

Because of the taxes imposed by the local authorities, it was important for the users to be able to demonstrate the amount of surface used for each function, as council taxes applicable for residential use are approximately half of the ones charged for business use. As most studios, especially the one room types, had a specific and flexible subdivision, it was very difficult for the local authority in charge to get a grip on the dual use, and to find a way to be flexible. In the end, it even was possible for some users with limited working apparatus (after appealing), to achieve a full residential rating for this purpose. Yet the fact that the council was slow in tackling the case, and delayed its tax request, was a significant problem, as many inexperienced tenants had not factored it this expense.

The unclear definition of the boundaries between work and live spaces also allowed Peabody to avoid the charge of value added taxes in the construction costs. These are imposed on developers for clearly defined workspace areas and usually passed over to users, which in this case further benefited from the possibility of avoiding them.

»Architecture

Even if the use phase showed the need to rethink and/ optimise a series of details, the way how the architects designed the live/work units - a high ceiling open space with lot of light- seems as a whole successful in providing the necessary atmosphere and flexibility. The high space of the smaller unit allows a further gallery space to be built by the tenants.

'What sold me on it was that it was open plan and there was lot of light, which is essential for me' Sue Chadwick, jewellery designer

It is very nice to work in here. I really enjoy being here' Luise, graphic and interior designer, living and working at Westferry Studios, 2006

At the time of my visit, at least one tenant had moved his business elsewhere and still used the space to exclusively live there. At the same time, other tenants saw the project more as a working space, and planned to keep the business there and possibly expand as part of the building became available under normal market conditions.

»Other aspects

The dual use of the project was also reflected in the fact that Peabody decided to use a hybrid tenancy agreement unusual for the Trust and for commercial properties. In order to help the tenants with their liquidity, the rent could be paid monthly and not quarterly in advance. While the agreement offered no security of tenure, courts considered them de facto residential tenancies. This means that in case of arrears or other problems with the tenants, the Trust has to have an order to repossess the flat, and cannot simply change the locks.

»Long term development perspective

The innovative approach of this project resulted from a long term view, and not in terms of financial win. Genuine live/work schemes with a focus on the employment aspect such as this one are hardly palatable for purely commercial developers. They in fact require a long term commitment to avoid residential reversion, and a high investment in resources to help tenants develop their business and possibly their interaction (Dwelly, 2003, p. 4). This makes sense in terms of fostering the development of the urban area where the project is located, but not in terms of direct return of investment. According to this perspective, the project was possible because the Trust was not acting commercially, but focussed on supporting small business and fostering employment in the area.

Layer 4: With which resources / With whom

No direct public funding was available, and the project was only possible because of the non commercial involvement of a series of institutions and charities, such as the London Dockland Development Corporation that provided the site for one pound. This involvement somehow compensated the lack of other public funding. Peabody itself developed the project without a public subsidy, usual for traditional housing projects, and used private resources to build and subsidize the rent. The selected tenants had however access to a start up loan that could also be used for adapting the units. Half of the costs of the business consultant were additionally footed by the East London Business Centre and related institutions, while the other half was covered by part of the rent.

The project meant entering a new territory for the Trust and was part of on an innovative range of projects developed under the lead of Dickon Robinson. He emphasized for the Trust the need for a forward looking approach and innovation across the board, and was willing to take the necessary risks involved in such an attitude (Blacker, 2004).
(Dickon Robinson left his role as Director of Development and Technical Services in 2004, as the Audit Commission reported that the Trust had neglected its older properties, to emphasize cutting edge innovative designs which do not meet the needs of tenants. He moved to the commercial arm of the Trust, while noting that the developments in question represented a relatively small proportion of the programme. He is currently Chair of Building Futures at the RIBA. Under his lead this body has produced the report *Housing futures 2024*, a provocative analysis of the future of housing, as well as *The future for architects*? about how the profession is thought to change and evolve in the coming years).

The project involved a considerable investment in management resources even after completion. This involved not only the business consultant, but also the Peabody's referent for the property. The need for such resources was possibly underestimated at the beginning, as these are not usually accounted for in traditional property projects. The set up period was particularly intensive, with a person from Peabody working half time on it on top of the business consultant. . Afterwards, the property management costs corresponded roughly to 2% of the rent, and were covered by the service charges (approximately an additional 10% of the rent) paid by the tenants. The property management, in 2004, was regularly on site twice a week. Additionally, there used to be monthly meetings for all tenants.

Even if the charged rents are relatively high because of the very good location near Canary Wharf, the return of investment on the project has been difficult. Rent alone, in fact, has not been covering the investment done, which means that the project feasibility heavily depended on the very high financial support of the other involved institutions (LDDC, ELSBC). Relatively high arrears possibly in connection with the financial crisis (by 2003 at least three units had to be repossessed because of high unpaid rent) made the financial situation worst.

The financial difficulties as well as the need to better manage the business community lead to a rethinking of the project sometime in 2003. The aim became to let 50 % of the units at market rate to more established businesses, theoretically enabling start-ups a more fruitful exchange and networking In this shift from subsidized to commercial, the project could further rely on the attractive location, which represented a long-term resource for the scheme.

Effectiveness

Information available on the performance of the early residents (Dwelly, 2003, p.32-33) reported of mixed business success. Out of the 26 initial tenants, 16 were set to remain, with a least two relocating to even lower cost premises, and some going out of business. A few had actually managed to develop their business as to be able to afford different premises, and six businesses on site were described as strong. Considering that the initial tenants were mostly inexperienced newcomers and that the economy had been hit very hard in the period, this was an appreciable result.

The effectiveness of the project, or the lack of it, also relates to a series of critical issues concerning the architectural solution proposed. The lack of a space for networking or of a shared facility appears particularly relevant, as the businesses had from the start not much contact with each other and the project's aim was to foster a community. This was also mirrored in the lack of a clear concept about how the users could connect to each other, in terms of spaces and of organization. In one case, for example, it was the business consultant who established a contact, for example suggesting that one tenant (a jewellery maker) who was looking for a part time job could find it with another tenant (a women clothing retailer) looking for administrative help. This link demonstrated the potential of business interaction, as it catered for knowledge exchange beyond a pure employer-employee relation and opened new business opportunities for the involved people. Yet even after four years, only few businesses shared interests and had some contact, but this was not a given and had a DIY nature (Dwelly, 2003, p.25).

'I think the Peabody Trust was envisioning it to be more of a community, but somehow it did not quite work like that, I do no really know why. They had a restaurant downstairs, but there was so much about the restaurant that was wrong that nobody ever went there. They left now and it is being converted into an Indian restaurant. There is no real communal area and I think also that the business in here are very very different kind of people' Luise 2005.

Another relevant contradiction in the basic concept of the project lied in the combination of kind of tenure selected with the decision to deliver the units as shell. The need of long term investments on the tenants' side to adapt the units did not match the short term perspective of the subsidized lease. The initial flexibility for the first tenant came at a relatively high price, as they had to invest a significant part of their limited budget in the adaptation of their spaces. Second round tenants could instead profit from the initial adaptation and had possibly lower adaptation costs. The issue of how to combine work-live concepts with the right tenure is a complex one, as the

Table IV.5.1:
Critical issues at Westferry Studios 2004/2005

Provision of basic shells	The choice of providing baisc shells instead of finished units was problematic because of the tenure, as it required non refundable investment from the tenants
Enhanced load bearing of the construction	It remained unutilised, as residential load bearing would have been sufficient (status 2003)
Communication technology:	The scheme had no broad-band and the TV reception was very bad, forcing users to go for expensive solution
Signage:	Bad signage and poor presence on the surrounding public space were a problem from the start. Businesses profit from being present on the street and need to be well signposted at the entrance and easily found by visitors.
Security:	The open configuration of the communal spaces, combined with the coming and going of the commercial premises, made the building particularly attractive for burglars. The low specification of the installed locks did not help
Lack of a communal facilities:	To save cost, the building program did not include a communal spaces and shared facilities, even if it should have encouraged residents to network among each other. The design of the access decks did not really help the situation, at least in winter, as the high windows allow for relatively little eye contact. The restaurant on the ground floor could have made things better, but it was too expensive for the tenants and did not provide an effective alternative

based on the analysis of the Live Work Network (Dwelly 2003)

The users encountered a series of difficulties in the building only partly connected to the need to limit the budget. This list provides a good check list for live-work projects and highlighs the relevance of small details in supporting or disrupting a project.

tenants' interest of building up a property asset needs to be combined with the need for a long term encouragement and enforcement of the live work use:

At West Ferry some tenants would like shared ownership. They would like to build up an asset for their company while based in the property. Originally when the scheme was built the Charity Commission would have ruled this out, but it has changed its rules on regeneration allowing this to take place. This is a dilemma for housing associations because having rented live/work units ensures enforcement or encouragement of work use. Selling units clearly leaves associations in a similar position to developers with less interest in the long term use of the properties, particularly on a site where there is not rented housing or other activity going on. However many companies will want to invest in property because this will be a way of creating an asset that can help the company develop, and there is a natural tendency amongst those with sufficient income to want to own their home anyway. The answer may be shared ownership or flexible tenure levels within any given unit. If the association can retain some rented element on a live/work unit it can more successfully ensure work use on the property.' Dickon Robinson 2004, on the role of tenure and the potential of shared ownership in live/work schemes.

The shift from a subsidized scheme to having 50% of the units let at market rate was of course a rather drastic change, especially for potential tenants in the process of joining the scheme. The rebranding and marketing was commissioned to a public relations agency (Evolve, www.e-volve-consulting.net) and it was aimed at making the studios more attractive to market rent tenants. The program included a new web site, a new brochure and advertising. The effectiveness on the short term for the tenants was shaky, as the change effected applications that were based on the previous model and did not really address the need for a shared space for networking.

'Also, at the time it seemed affordable, but they changed their minds after they'd accepted my application so it went from being subsidised rent to market rent, which wasn't so palatable' (Sue Chadwick, jewellery designer)

'The trust tried to introduce some kind of improvements, there was a big pooha, they employed some other agency … I do not want to sound unthankful, because I do really like it here, but all what came out was that we got new letterboxes and new doorsigns, which was fine but.. not that great improvement after all..' (Luise)

The evaluation of the effectiveness reflects the broad range of aims of the projects, from providing a dual use space to supporting business growth. It is essentially in the way in which the hardware (the spaces) and the software (services) are combined that the performance and effectiveness of the proposed innovation is defined: the shell spaces provided were problematic not in themselves but because of the tenure offered and vice versa the idea of community had problems also because of the lack of a shareable space.

Diffusion

The Westferry project received relatively limited international attention. It was however one of the first cases promoted by the Live Work Network, an information and lobby organization promoting awareness and sharing know-how about this kind of dual use. Live work and the need to find a proper regulatory framework for this kind of dual use is a relevant issue in London and beyond, possibly more than in other national contexts.

Peabody Trust pursued an interest in live/work in at least two other projects, however in a different frame. In the project Bedzed (experimental first zero-energy housing development in UK) and Rainy Diaries (an experiment in prefabricated housing) some live/work spaces have been provided, but mostly to respond to planning requirements for employment on site. Difficulties had also arisen over mortgages as commercial mortgages are granted according to very different criteria than residential one, and would-be purchasers are required to fulfill criteria for both. According to Dickon Robinson, the definition of a proper live/work use class would be a necessary step to guarantee further diffusion. In 2004 he outlined the following vision:

'We should take the planners on this issue, in my view. They should become much more flexible about property use to reflect the dynamic nature of modern local economies. We are designing dual use property. Live/work is flexible or it is nothing. I see no reason why these units should not be 100% work or 10% live at various times to reflect the economic cycle and the state of the resident's business.' (Dickon Robinson, 2004)

'A live/work use class would be helpful in planning terms. This would mean that a property could be used for either living or working or both. This would have to be a liberating rather than a restricting measure though. At its best it would mean that anyone buying or renting a unit would have to accept that next door could be working - or living. Without this kind of consent it could be legitimate for residents to complain' (Dickon Robinson, 2004)

This suggestion has not yet been followed. There is however a raising awareness of the need to loosen the use class system, and in specific to allow in London change from empty commercial to residential, supported by CABE and only partly by the National Planning Policy Framework, who has recently watered down its initial suggestion that this kind of changes should be approved by local councils in United Kingdom.

Lessons learned

The lack of a clear regulatory framework and a specific use class have a broad range effect. Serious issues concerning taxations, mortgages as well as the lack of specific subsidies for implementing this kind of projects are partly a consequence of this lack of clarity

When combining product and services, there is a need to understand how the different dimensions work together, and how they can create synergies or instead reduce their respective effectiveness. In particular, the way in which flexibility is provided in terms of architecture has to be tuned with the proposed tenure.

To foster the interchange among involved users, both software and hardware strategies need to be combined. Spatial and management resources, as well as a clear vision about which kind of profiles can fit together, are vital.

Open questions

How has the project evolved?

Fig IV.5.6 and IV.5.7
Interior
In this case the user (a Japanese designer) installed a mezzanine floor with the help of an architect friend.
Source: Steve Tanner/LEPHOTO.COM in Dwelly 2004

11. INNOVATION AHEAD

The previous chapters have reviewed how existing knowledge about innovation from other disciplines supports a theoretical framework specific for collective housing, and how a structured analysis of best-practices provides important insights about how innovative results can be achieved in this field. The framework and the cross-case analysis contribute to answering some basic strategic questions about the definition, mechanisms and dimension of innovation in collective housing.

'Collective' innovation

The definition of what innovation is about is essential to understand the mechanisms and dimensions of innovation. This understanding allows enhancing the role that innovation plays in the specific field and accelerating it. The case studies have highlighted the relevance of the 'collective' dimension of innovation, beyond immediate financial profit. Mirroring the definition of social innovation discussed in Chapter 4, innovation in collective housing can be now defined as a solution that benefits society or parts of it, and provides a 'collective' value of some sort beyond or in combination with the value given to the individual users. By recognizing and accepting the collective as defining dimension of innovation in this sector, it is possible to embed the time perspective, as a long term component in the life-span of the achieved value is implicit, beyond immediate consumption. Innovations where this type of value chain is present are 'worth the effort', and represent in the perspective of this work the focus of research on how to achieve better collective housing.

Role of niche innovations

One of the initial objectives of this work was to research innovations that could be implemented in the large scale and become dominant designs. The result has instead highlighted cases of relevant 'niche' innovations that make sense in specific contexts and respond to very specific problems, but do not necessarily have the ambition and/or the possibility to directly influence mass production. By looking at these cases, it was however possible to approach the general issue of how to create new housing solutions to given problems. These solutions represent therefore a reference and inspiration for further production, for example by introducing patio housing in the possible range of urban housing typologies in the Netherlands, or by demonstrating the potential of generous 'in between spaces'.

The importance of these experiments moves beyond their specific scale, as they become important demonstrations of the potential of achieving better solutions in general even within mostly standard set-ups. This is only possible once the focus is set on the deriving know-how about 'how to organize housing inventions' (this question was formulated by Ton Schaap, the planner behind Borneo and Sporenburg). The role of these niche innovations, and of the research, is not to directly create new dominant designs, but to be able to offer better small scale (and somehow even custom-made) solutions that can influence incremental innovations in standard productions.

Enabling conditions and set-ups

The previous analysis has highlighted relevant difficulties in the sector. The lack of innovation in the sector is not by chance. Construction, including housing, is a sector where 'low-skill equilibrium' takes place, thus where suboptimal set ups and results are common. The specific nature of housing goods lies in their fixed spatial location, as well as their durability. Similarly to services provided locally, instead of being traded on a market, firms engaged in risk-averse, low product-specification strategies on the basis of low skills can survive. A low-skill equilibrium has little possibility of innovating also because of the limited innovativeness of the actors involved. In the case of collective housing both developers and users result strongly influenced by a short term perspective, and thus reinforcing the lack of innovation aimed at long term sustainability. In this set-up innovation will need to be explicitly sought after and steered. And it will need to move beyond the design level to the whole process, as architects alone will not be able to carry it overcoming the existing barriers.

Role of design

During the modernism architects, especially in Europe, were at the forefront of the innovation process concerning housing, and collective housing in specific, seeing their role as the one in charge of defining how domestic space should be conceived and built. Today this role seems to have moved towards other actors, such as Ikea- that much more strongly influence users' expectations towards the performance of domestic space (see Chapter 3).Still both the case studies and the theoretical framework make the fundamental role of building design in the innovation process of collective housing clear. It is design, and thus the work of the architect, that makes the abstract aims real and tangible, interprets them, gives them a form and an aesthetical value. Design carries much of the responsibility of how a project performs in the end, as it is through design that essential aspects of the use interface are defined and users' acceptance becomes possible. What counts is a design that can carry the meaning of the innovation in question, thus a design that 'makes sense' of the aims, and not design for design's sake. To produce such design architects need to be deeply involved in the issues at stakes and in the process, and in strong collaboration and exchange with the various actors involved, from developer to consultants to users, is required.

Extended innovation design

As demonstrated by some of the case studies, the notion of design can be extended beyond the building, in a perspective where software and hardware, physical product and immaterial services, building and 'economic model' (see for example the Shelf housing Case Study) are conceived and developed together. This extended notion of design also entails new possibilities for architects to position themselves, beyond the pure building approach. In the current ongoing debate about the opening of the field of action of architects, this kind of 'innovation concept design' is one of the possible new territories.

Process design

Not only the innovative product requires a design, but also the development process will need to be specifically designed in advance, at least in some pivotal parts. Only if the process is open-ended enough, it will be possible to cater for the higher rate of unknowns that moving out of standard routines involves, and develop creative solutions able to hit the required targets. All this calls for a much more explicit formulation and implementation of the role of innovation's care-taker, as well as questions the role of standard architectural design competitions. Finding specific solutions out of the standard palette requires much more collaborative and open set-ups than standard competitions, based on a design process happening behind closed doors.

Combining private and public perspectives

The relative high costs of building are relevant factors contributing to the general conservative approach specific to the housing market. This lack of experimentation involves both the supply and the demand side. As buying a house represents usually the biggest investment done in a life-time, private buyers rarely take the risk that goes with new, untested products or atypical , as they tend to relate their choices to standard market values, instead of 'typological added value' (for example focusing on the number of rooms more that the actual quality of the spaces). Similarly, low profit margins in front of a capital intensive production will tend to reduce the capacity/ willingness of taking risks from the offer side. Consequently, the risks involved in entering a conservative market with an innovative product will be high.

Innovation in collective housing in the logic of this work needs to combine private and public perspectives. It will need to happen within standard financing and reach standard users. The selected case studies have demonstrated that this is possible, that innovation does not need to cost more, at least in terms of building budgets, and that it is possible to achieve better performing housing and also radical innovations, once the will to do it is there. What the case studies have on the other hand shown is that the 'push' to innovate and the willing to take risk is born essentially in a public perspective, and mostly developed by non-profit actors. Still, it was possible for profit-oriented actors to join in. Some of the projects also demonstrated how the added performance value reflects in the real estate one, thus offering a win-win result combining public and private perspective.

Normative set-ups

The strong normative set-up that accompanies the collective housing production (minimum standard requirements, energy-saving requirements, fire regulations, subsidies regulations, planning, etc.) in all contexts of reference is often an additional factor pushing for the maintenance of the typological status quo. Of particular relevance for the further research on specific enabling conditions and barriers the question of how normative aspects influence the possibility of experiment and innovation in collective housing. This is part of a bigger need to combine research and development focussed on hard-technological aspects with research and development of the

soft aspects, such as the potential of creating use-value over (?) the long term, the integration of products and services, and the possibilities of providing more performance-based regulations.

Moving ahead

In the current ongoing debate about the opening of the field of action of architects, 'design innovation management' could be one of the possible new territories. To do this it is important to identify the specifics of architecture and of collective housing, such as the mechanisms and patterns related to the users or the potential of developing innovations as combinations of building and services, opening a new area where creative solutions can be found, also by architects themselves, as for example demonstrated by the case of Shelf housing in Hamburg.

Innovation is not about the idea in itself, but it is about how to reach this idea and how to implement it. In this process there are more possibilities for architects to position themselves, beyond the pure building design.

Agenda setting

To test and expand the proposed guidelines and the framework. the following four directions for further research have been identified:

• *Theme based research*, focussing the 'innovation mapping' work on specific themed innovation, such as affordable housing, combining both analysis on realized cases and 'projections' developing new concepts for new products, for example through the combination of hardware and software/ housing products and services that relate to it.

• *Context based research*: investigating specific contexts where innovation is sought after, for example the Vienna housing system or the specific of the Aspern site redevelopment always in Vienna. Here the aim is to provide an understanding of how innovation works and which results can be achieved within a specific system of subsidies and local policies, as well as what needs to be changed if more radical innovations are sought after.

• *Organizational set-ups* related to the 'production process' of innovative housing typologies (thus the reflection on what has been defined 'process design' in the previous chapter), where typologies are here meant beyond the ph ysical and including as well service components.

• *Prefabrication* looked at through the mapping tools developed in this work, and focussing on the combination of technological innovation and post-modern notions, too, with particular focus on how the value distribution chain and the linkages between designer, manufacturer and clients can be made to work.

All this clearly needs to happen in a cross-sector collaboration. Possible first steps are a symposium or network aimed at discussing the specifics of innovation in architecture and of collective housing in specific, with focus on specific role of architects within the innovation process.

Yet all this would not make sense without investing in raising the awareness of the institutional stake-holders, in charge of many of these processes, who possibly are also the ones that should be the most interested in the potential of the discussed format of 'collective' innovation.

ANNEX A

BRIEF REASONED GLOSSARY

The term individual or single-family housing is a relatively clear-cut definition, with little space for misunderstandings. The term collective housing is much more blurred, and the lack of a broadly accepted naming convention creates quite a few misunderstandings According to some authors collective housing refers in fact to form of co-housing of Scandinavian tradition - also described under communal housing. Yet this same term in some recent architecture publications indicates forms of housing where simply more dwellings are part of one building, without specific forms of communal organizations. Quite a few alternative terms –also in other languages- are available. Thus the choice of the terms is part of a bigger question of what are the relevant criteria defining buildings containing multiple dwellings.

Among al the possible terms ***collective housing,*** as in the Latin understanding of it, seems the most useful also in an English speaking context. This term ***moves beyond an issue of geometry or form, and touches the essential characteristic of these housing typologies: the fact that something needs to be shared***.

Collective - in this case- does not need to refer to high levels of sharing, such as in communal housing, but to a form of negotiated individuality, that is a precondition in these forms of housing and distinguishes it from individual housing. Additionally, this negotiation also reflects in a more complicated development process as an increasing number of actors (developers, planning authorities, engineers, multiple users) are required to act together in order to realise such buildings. In this sense, **the term collective can be referred both to the use** (the building offers 'collective', shared spaces or at least shared elements) **and to planning process** (a 'collective' development involving a variety of actors and decision makers).

» ***GEOMETRY*** **Housing block, slab, high-rise or multi-storey housing** (and their literal translations in other languages such as the German *Geschosswohnbau*) are all essentially describing the building in terms of physical volume, focussing on the fact in these typologies dwellings can be assembled both on top and next to each other forming one big (or bigger) building. This kind of linguistic approach can be found in the German language and in English, but is less common in Latin languages. It does not include forms of low-rise housing, such as row-houses, terraced or patio- housing. Block, sometimes also city block, involves two possible interpretations: the housing block in the sense of a quadrangular building enclosing a courtyard, typical of the XIX century development of many European cities and beyond, or the individual slab block, as for example the Mies van der Rohe's building in the Weissenhof Siedlung.

» ***DENSITY*** The term **high density housing** focuses is on the fact that by sharing elements of the building, higher densities can be achieved. It includes both high and low-rise situations. **Town houses or urban housing** are also used in English, implying the fact that in urban contexts compact typologies predominate. In American English, however, a 'town house' is usually an attached single-family dwelling.

» ***USERS*** Terms such as **social housing, case popolari** ('popular' housing in Italian), **Miethaus** (literally rental housing in German), focus on the provision of affordable and possibly rental housing or the lower classes that was predominant for these typologies in the past, but does not apply to the current situation. Both forms of high and low rise are included. European statistics published in English distinguish between **multi-family dwellings** and high rise dwellings, the latter defined as dwellings in buildings that have more than 4 storeys and consist of multiple housing units. Semi-detached and row housing, on the other hand, might or might not belong to the multi-family category, depending on the authors' interpretation

» ***OWNERSHIP*** Terms such as **habitat collectif** (French), **edilizia residenziale collettiva** and **condominio** (Italian), focus instead on the implicit sharing needed when more dwellings are connected to each other (the site, common walls, a common roof, etc). This criterion is common in the Latin languages, and correspond to the English term **collective housing** but none in German. Sometimes collective housing refers to form of co-housing of Scandinavian tradition - also described under communal housing . Both forms of high and low-rise are included.

ANNEX B

STATISTICAL SOURCES

Until recently housing has been dealt with at national level only and no coherent housing policy at European level has been yet put in place. Consequently, for a long time there has been a lack of coherent centralised information on housing needs and policies within the European Union, as noted by various specialists (Maclennan, 1996, p. 2; Priemus et al, 2002, p.1; Czischke, 2006). The first EU-scale survey - the European Community Household Panel (ECHP) – dates back to 1994.

One of the first available sources for statistical data more specific to collective housing in Europe was a 2005 report with the slightly misleading title: *Sustainable Refurbishment of High-Rise Residential Buildings and Restructuring of Surrounding Areas,* commissioned by the 2002 European Housing Ministers' Conference. More than a report on sustainability, it was the first collection of data on the existing housing stock–based on the response of the relevant national housing institutions to a questionnaire about the status quo and policies put in place in this sector. The aim was to gain information in order to tackle the upgrade of the existing multi-family and high rise housing in Europe, a key issue in order to achieve a sustainable urban environment.

A recent effort at the European level to produce fully harmonised and up to date data about European housing conditions from the social perspective has brought the EU –SILC (European Community Statistics on Income and Living Conditions) into being. It refers to the 27 EU countries as well as Iceland, Norway, Switzerland and Turkey. The EU-SILC was developed as a key support for the Europe 2020 strategy set up by Member States and the European Commission with the goal of 'promoting social inclusion, in particular through the reduction of poverty, by aiming to lift at least 20 million people out of the risk of poverty and exclusion' (http://ec.europa.eu/eu2020/index_en.htm.). Additionally, European housing statistics are now published regularly and available on the Internet.

At international level, relevant data and assessments on housing conditions including non EU Members are provided by United Nations Economic Commission for Europe (UNECE) and its Committee on Housing and Land Management, that between 2000 and 2006 published a series of Bulletins of Housing Statistics for Europe and North America. Additional information about the rate of change in the number of residential buildings and floor area produced (on the base of building permits applications) can be found in the Eurostat statistics on construction.

epp.eurostat.ec.europa.eu/statistics_explained/index.php/Housing_statistics
www.housingeurope.eu
www.unece.org/stats

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Silvia Forlati studied architecture at IUAV, Venice, Italy, and Arkitektskolen Aahrus, Denmark. She graduated cum laude in 1996 in Venice. After obtaining a master degree from the Berlage Institute Amsterdam in 1998, tutored by Elia Zenghelis and Raul Bunschoten, she worked in the Netherlands for Venhoeven CS and then joined Zaha Hadid Architects. There she contributed to the design and realization of the Terminus Hoenheim Nord (Strasbourg, France) that received the Mies van der Rohe Award in 2003, and the Wolfsburg Science Center phaeno (Wolfsburg, Germany). In 2001-2002, she relocated to Singapore, representing ZHA for the one-north Master Plan.

Since September 2002 she has been based in Vienna, where she founded the practice SHARE architects, with Hannes Bürger and Thomas Lettner. The practice has developed an increasing portfolio of projects both in the private and public sectors, and was nominated for the Mies van der Rohe Award 2013 for the design of the Palliative Pavilion Wilhelminenspital Vienna. As assistant professor she taught at the Department for Housing and Design, Vienna University of Technology between 2006 and 2010, where she continues to work as lecturer. From 2006 to 2008 Silvia held the presidency of the Wonderland Platform for European Architecture, a network for young European practices that she helped conceiving and develop. In November 2011 she published the *Wonderland manual for emerging architects*, edited in collaboration with Anne Isopp and Astrid Piber, a unique overview of the most important issues that need to be dealt while setting up and running an architecture practice.

In her work, Silvia combines architecture practice with research and teaching and international lecturing activities. She curated various exhibitions and organized symposia on themes related to the architecture practice., such as specialization and architectural competitions. Her main research interests include housing innovation and the development of the professional field. More information available on www.share-arch.com.