The book that you hold in your hands is a guide on ideas, concepts and projects that advocate for the transformation of the built environment. This is a vision which is already shared by stakeholders ranging from municipalities, architects, urban planners, developers, landlords, private companies or industrial associations. Our aim with the creation of this publication, one of the by-products of the 5th European Parliament Gypsum Forum, is to present the potentials that this transformative attitude entails, opening it up to a broader public and raising awareness towards the richness of what it is already there.

This attitude, this care and attention towards the existing, is not conservative by any means. On the contrary, it is radical and contemporary in its formulation. It is more audacious as it implies a higher dose of risk than demolishing and rebuilding. It is richer as it adds on instead of flattening and erasing. It is more meaningful in terms of the construction of community life, sustainable development and circular economy. It is extremely humanistic and optimistic as it founds on our own capacity to evolve, transform and adapt.

The pertinence of this discussion -and the projects here presented- is evident and so it was highlighted during the aforementioned forum1. Transformation is a possible answer to both the environmental, security and hygiene challenges that our contemporary society demands but also a solution to reactivate and reuse outdated buildings. The combination of the two would result in a better, more effective and more qualitative living environment.

The current situation in Europe in terms of housing is clear and devastating: dwellings are insufficient in number and quality. For instance, in France, over 1.7 million of people do not have a proper home while more than 4 million dwellings remain unoccupied2. This paradox serves as a proof of the lack of correlation between the offer and the demands. The solution is to provide more dwellings but also better ones and transformation, densification, and renovation are perfect tools for that.

The book is a short compilation that elaborates on this attitude towards the existing and presents it as a possible solution to the challenges of urban living. It is structured in two main parts, each of them organized around the four key concepts that transformative projects deal with: density, comfort, versatility and economy.

The first part is a visual guide on these concepts and the ideas, strategies and precedents that deal with them in a relevant manner. The guide’s objective is to set up a common ground that should help the reader to better understand the rest of the book. The guide does not intend to be comprehensive on its development as it would be impossible to cover the richness and complexity of subjects; on the contrary, it remains open to interpretation as to indicate new ways of exploring the subject without narrowing the audience.

The second part presents some of the projects discussed during the forum. They are presented in a homogeneous graphic style to allow the reader to establish connections and to identify the differences between the proposals. Each chapter, each building, is used as a reason to discuss ideas on transformation in a broader sense while providing enough evidence to understand the specificities of each operation.

Finally, we would like to thank Eurogypsum for their financial and moral support, in particular to its Secretary General, Ms. Christine Marlet and the members of the board who willingly participated to the discussion, as well as to Gauthier Bas, Camille Goudarzi and Reynald Chalet from Old Continent communication agency for their work, effort and thorough contributions. Special thanks go to Roddy Bow for his patient proof-reading and final adjustments. Finally, we would also like to express our gratitude to all those who participated to the European Parliament Gypsum Forum 2017 and in particular to the architects Daniel Dethier and Jean-Philippe Vassal who graciously gave us their time, share their knowledge and indulgently reviewed the final result.

Marcos G. Rojo and Olivier Lekien, Paris, 2017

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1 European Parliament Gypsum Forum 2017 « Affordable Solutions to Overcome the Challenges in Urban Housing » organized by Eurogypsum aisbl.
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The process of transformation of the existing built environment relates to four principal inter-related subjects: density, comfort, versatility and economy. These subjects are both aim and consequence of transformative projects, encompassing diverse strategies, systems, attitudes and materials. The following glossary is established in order to facilitate an understanding of these main subjects by defining subsequently related topics in a comprehensive manner. These topics -the entries of the glossary- are grouped according to the main four categories with no further classificatory intention.
a. The quality or state of being dense.
b. The average number of individuals, activities or units per space unit

The process of transformation of the existing implies an addition on what it is already there. This could entail an increase on the density of a place, either in the form of additional dwellings, higher ratios of m² per person or, simply, on the number of people living in the same place. Densification has effects on the way the economy of a settlement is organised - a building, a neighbourhood, a city- and, as such, it can be crafted, designed.

More density, more space:
Density of population is a malleable relationship between the amount of inhabitants and the space they occupy. This ratio can be varied, modified, crafted according to different parameters: by subdividing the existing, reducing surface per inhabitant (a,b), by extending and occupying empty buildable space (c) or by vertically expanding the existing (d). ‘More density, more space’ is a strategy adopted to provide maximum space for living to a maximum number of people. It is a process of densification by addition to the existing, not by sub-dividing it and reducing its intrinsic qualities.

Density of use:
Density of use is a parameter that shows the amount of potential activities or uses that a certain space can support. It is directly related to the capacities of the existing structure and their relation with the public domain. Transformation allows the increase of this density of use, activities and facilities: by bringing new people to existing situations, the potential for interaction is increased, triggering new synergies and relations. This parameter broadens the notion of density to a more abstract definition which connects in a more meaningful manner with successful community life. Urban life appears, therefore, not only as a matter of m² ratios but also as a set of relations between neighbours, shared spaces and temporary occupations.
5 - Ratio between operational cost and performance
Density (D) = People (P)/m²
Infrastructural Cost (IC) = Op. Cost ($/yr) / Density (D)
The ratio depends directly on the density of a built environment: an increase on the amount of people living in a given environment (i.e. passing from a low-rise suburban to mid-rises) implies reducing the costs of operation –and maintenance– per person.

6 - Parisian urban prospect, rue de Reuilly et Boulevard Diderot
The urban prospect is a rule that defines the maximum buildable volume in a given plot of an urban environment. The prospects vary in their formulation according to local regulations but generally depend on the width of the surrounding streets of the plot as well as on the maximum height allowed for the constructions. The prospect, which legally provides the owners of the plot with ‘air rights’ inside the maximum volume, create a sort of ghost presence made of the potential constructions the city can host.

Capable situation:
The opportunities for transformation and densification are given by the existence of situations that provide or host these kind of potential interventions. This latent condition determines what is called a capable situation. The latency, as well as its formal expression and capacity can be defined by different parameters, including urban regulations, empty plots, brownfield sites, abandoned buildings, air-rights, remaining FAR or simple infills. Yet the nature of these situations depends on local context, their common denominator is their structural openness. The freedom that this structural condition provides allows to envisioning further iterations.

Infrastructural optimisation:
The city provides a full array of infrastructures for the life of its inhabitants. This network includes all the services and facilities that allow urban life to happen: sewers, water, electricity and gas supply, telecommunications, public transportation, etc. The ratio between the cost and the performance of this network determines the nature of the economy of an urban environment. The viability of new developments and transformation operations rely, therefore, on this factor and, indirectly, on the density of a place: the bigger the amount of people served by the same infrastructure, the better it is in terms of profitability. Density -and opportunities for densification- appear as a tool for potential improvements of the infrastructural network as it helps to attain better equilibrium of means in terms of investment, maximum capacity and profitability.
The outdated and obsolescence of certain constructive systems, as well as their impact on the quality of the space and comfort they provide, is one of the main arguments to counter and criticize transformation: for some critics, it is simpler and more effective to demolish and rebuild than to transform. However, the evolution on lightweight construction allows for innovative solutions providing the highest spatial quality, fulfilling the highest of contemporary standards, even in renovation or transformation projects. The nature of these improvements is diverse and conform to a notion of domesticity based on maximum pleasure with minimum means -less weight, less energy, less water, less expenses-.

Soundproofing:
The capacity to reduce the sound pressure from a source into a receptor depends on the weight and flexibility of the material systems surrounding them. The soundproofing capacity of a system is measured according to the amount of reduction experienced after the passage of the sound through it. A common unit of measure is dbA, varying according to the nature of the measured noise. The ideal material condition for an optimised soundproof rarely exist in natural form but are provided by different industrialised and manufactured products, such as lightweight drywall systems. The performances that these kind of systems offer, combined with the thinness of their components, are crucial to understand the quality of the resulting spaces after transformation.

Fire resistance:
The performance of materials in relation to fire depends on two aspects: the capacity to resist to flames (burnability) and the time necessary to lose their structural integrity. It is important that these materials do not produce toxic emanations during the time of exposure to fire sources. Fire resistance is measured in time expressing the duration for which a passive fire protection system can withstand a fire source without neither compromising its stability nor the security of the occupants.

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7 - Levittown, NY, U.S.A
Levittown (NY) is one of the largest mass-produced suburbia, typical of post-war period in the U.S. The urban morphology of this kind of developments is characterised by a low residential density with great distances to urban centres or facilities. This idea of living corresponded to the generalisation of mass-produced goods such as house appliances and cars that created an extended idea of pure autonomy and individualism. However, the principle side effects of these developments is a large urban sprawl resulting in a very expansive and expensive network of infrastructures.

8 - Kowloon Walled City, Hong-Kong
Kowloon Walled City was a large and dense informal settlement in Hong-Kong, demolished in 1994. The settlement, initially a military fort, became an enclave after the lease agreements between Britain and China. The settlement challenged all legislations and agreements on desirable living conditions by increasing density to a extreme level. As a result, it became a subject of study for its innovative forms of construction and appropriation but also for the unhealthy environment it provided and the saturation provided in the use of the existing infrastructures.

9 - 50,000 new dwellings, Lacaton & Vassal Architects, Frédéric Druot
The 50,000 dwellings project is a research-based proposition to develop a territorial strategy in the Bordeaux region based on the precise and delicate study of the existing conditions. The proposal does not develop any kind of masterplan but a collection of case studies treated with equivalent care and attention. The premise is not to cut, disturb or demolish anything that already exists.

a. Contented well-being
b. A satisfying or enjoyable experience
c. One that gives or brings comfort
Thermal comfort:
Thermal comfort is a condition of mind that expresses satisfaction with the conditions of temperature of a place. This assessment is subjective but depends on the exchanges between human body (heat gains and losses) and the environment. The environmental parameters regulating these exchanges range from air temperature or air speed to the relative humidity. These conditions directly depend on the degree of protection and enclosure provided by the given space, precisely, on its capacity to facilitate or block heat exchanges. This capacity is expressed by the thermal transmittance of materials.

Domestic luxury / spatial comfort:
The notion of domestic luxury or spatial comfort defines a set of qualities desirable in a contemporary dwelling. This set of qualities include well-known notions such as a major, generalized access to daylight or air quality, which still represent main factors to determine how desirable a livable space is. In addition to this, it exists a set of qualities based on the pleasures of daily-life, with no predetermined uses or modes of living. The quality of these interiors, these domestic conditions, are based on what is already there, with no needs for sophistication or ostentatious demonstrations. It builds upon existing: it is about having everything at reach, it is about freely circulating between inside and outside, it is about optimal interior conditions (temperature, quality of air, humidity...) it is about being part of a larger community... and that starts at the interior of ones own apartment.

Heat exchanges and stimuli between bodies and close environment

GAINS
1) Heat produced by: a) Basic metabolism b) Activity c) Digestion d) Responses to coldness
2) Absorption of the radiant energy: a) Direct or reflected sunlight b) Radiant sources c) By contact with hot objects
3) Conduction towards human body: a) Through the air (temperature higher than body) b) By contact
d) Condensation

LOSES
5) Radiation towards the exterior: a) Sky b) The surroundings if lower temperature
6) Conduction out of the body: a) Air with a lower temperature than the body b) By contact
7) Evaporation: a) Breathe b) Through the skin

11 - Case Study House 8, Charles and Ray Eames
The Case Study Houses project is an experiment on affordable and efficient housing, sponsored by the Arts & Architecture magazine between 1945 and 1966. The Eames House, in contrast to other modern movement icons, was rich in its interiors, full of life, objects, artefacts and domesticity. This richness was supported by a very efficient use of industrialized materials and systems, transformed and re-used in a very innovative manner.

12 - Cité du Grand Parc, Bordeaux
Locatino & Vassal Architects, Frédéric Druot Architecture, Christophe Hutin Architecture
The project consists on the transformation of three inhabited social housing blocks (around 530 dwellings), first of the phases of transformation of the Cité du Grand Parc at Bordeaux. The addition of extended winter gardens and balconies provided the inhabitants with an extra dose of available, un-programmed space that allowed the inhabitants to reinvent their way of life providing them with a luxurious set of new capacities.
VERSATILITY

a. The quality or state of being versatile, embracing a variety of subjects, fields, or skills
b. The capacity of turning with ease from one thing to another. To have many uses or applications
c. Changing or fluctuating readily

Modularity:
The modularity of a system is the capacity to be reduced to a combination of individual units -modules-. This reduction provides opportunities to increase speed of construction and, therefore, costs. It also simplifies solutions and offers a broader array of possible combinations as each module has not a particular scale or unique mode of combination.

Flexibility:
Flexibility is the capacity to offer multiple possibilities of use, arrangement or combination. When applied to the built environment, it represents the capacity of an space to easily adapt to changing modes of living of the inhabitants or any other eventualities. Flexible systems do not have a structural function -as this would compromise their degree of flexibility- they are not fixed or anchored to a particular layout, position or disposition. They define ambience, moods, temporalities... As these are not fixed conditions but ever changing, adaptable systems should cope with this potential for evolution, opening up new possibilities.

Structural openness:
The structure is the supporting system of a building. Structure allows buildings to stand and resist not only their own weight but the loads derived from use. The openness of a structure relate the span between structural elements and the dimensions of these elements according to the supported loads. Structural openness is a relevant parameter in the context of transformation as it defines the capacity for occupation, the amount of available usable space. The higher this openness is, the less constraints apply to any transformation of the existing.

Design for deconstruction:
Designing for deconstruction is assuming the life-span of a building as a component of design. This assumed obsolescence is an extra input that can help to challenge assumptions on construction times, durability and, therefore, costs. Adopting this attitude towards the ephemeral would result in a more flexible environment, with a higher capacity to adapt to the needs of users and the evolution of societies.

13 - Nagakin Capsule Tower, Kisho Kurokawa
The Nagakin Capsule Tower is a prototype for architecture of sustainability and recyclability. Each module is plugged into the central core and replaced or changed when necessary.

14 - Centre National d’Art et de Culture G. Pompidou, Renzo Piano and Richard Rogers
The Centre Pompidou was designed as an open structure for Art and Culture. The column-free interiors provide multi-purpose spaces of an extreme structural openness. In addition to this, MEP systems are brought to the outside, directly fixed to the facade, producing very large surfaces with virtually no constraints on their use.
Efficiency:

It is the relation between the effects that something produces and its production/action costs. These costs range from traditional factors such as transportation or waste disposal to more contemporary concerns such as CO2 emissions or the occupied footprint. The success of any given system is evaluated according not only to its performative aspect but also on the amount of waste that its installation produces, the impact on the environment during its production, its capacity to be recycled or the amount of space needed for its storage. In this sense, the combination of modularity, recyclability and high-end performances seems an optimal choice.

Less is more:

Economy should not be seen as an unavoidable constraint but as a tool. It is not a restriction but a possibility for invention. The goal is not to reduce costs, building less to fit into a given budget; it is about controlling costs in order to build the essential, as a means to build more, better for more people, as a way to do more with the same amount of money.

ECONOMY

a. Thrifty and efficient use of material resources
b. Efficient and concise use of nonmaterial resources [such as effort, language, or motion]

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It is the relation between the effects that something produces and its production/action costs. These costs range from traditional factors such as transportation or waste disposal to more contemporary concerns such as CO2 emissions or the occupied footprint. The success of any given system is evaluated according not only to its performative aspect but also on the amount of waste that its installation produces, the impact on the environment during its production, its capacity to be recycled or the amount of space needed for its storage. In this sense, the combination of modularity, recyclability and high-end performances seems an optimal choice.

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Recyclability:
This action is at the core of any transformation project. It is not changing the nature of what already exists but understanding its potentials and bringing a new cycle of life and activity to it. It is not as simple and direct as building basketball courts with the rubber of sneakers’ soles; it demands a high dose of attention to understand which are the qualities to preserve and exploit. Recyclability could entail the transformation, the use or the misuse of existing traditional constructive systems. It is an attitude towards the project and its development more than a stablished set of recipes.

Transformation vs demolition:
The costs of demolishing and rebuilding are for greater than efficient transformations of what already exists. Besides the economy in terms of investments and construction costs, this strategy maintains a higher cultural attachment of inhabitants to the construction of the built environment. It reinforces, renews and restores missing cultural and social links. The subsequent logic of this attitude relies on a reinvestment of the richness of the existing situation.

18/19 - Rotor Deconstruction
Founded in 2005, Rotor is a collective of people with a common interest in the material flows in industry and construction. On a practical level, Rotor handles the conception and realisation of design and architectural projects. On a theoretical level, Rotor develops critical positions on design, material resources, and waste through research, exhibitions, writings and conferences*.

*Introductory text at rotordb.org
ON TRANSFORMATION STRATEGIES

CASE STUDIES

The following projects are particular instances that illustrate the principles of transformation processes, their potentials and their impact on the existing built environment. These examples are used and analysed in order to illustrate the thesis that this book supports: the act of considering, integrating and expanding the existing is the best strategy to overcome the challenges that cities face nowadays. There is not a single solution nor attitude to the subject of transformation. Each solution is contextual and specific in a case by case basis and so these examples should be considered.
Each of these case studies refers in different ways and degrees to the four key concepts developed in the introductory chapter of this book – A Visual Guide on Transformation –. In this sense, none of them is purely canonical (some of them prioritize certain ideas and positions over others) but they offer, as a whole, an overall view of the subject.

**New Living Space Easily Created.** Prof. Dr. Tichelman and Dieter Blome’s work on the reality and potential of vertical extensions is an attempt to develop a solid awareness towards the subject in the German context. The Deutschlandstudie 2016 frames the needs on housing stock in qualitative terms at the same time that indexes the existing situations capable of hosting or triggering vertical extensions. The study chooses this mode of extension, the vertical one, in spite of other possible strategies like the horizontal due to the nature of German cities, the particular needs of their inhabitants as well as the condition and characteristics of the different buildings typologies. Despite its precise application to the German context, the Deutschlandstudie 2016 provides keys to set up the discussion in overall terms and is a perfect example of how density and economy are key factors to be taken in account in order to improve living conditions.

**Transforming the Built Environment and Expanding it to Public Domain.** The Brunfaut tower, a collaboration between Dethier Architecture and A229, is a recent, in process example of how transformation projects can trigger urban renewal and serve as catalysts for change. The project extends vertically and horizontally the existing tower and maintains all surrounding areas, renovating them. However, despite this extension, the number of dwellings on site remains almost the same. On the other hand, the expansion serves to increase the amount of space allocated per person, improving the interior comfort as well as providing a higher dose of versatility in the use of both public and private spaces. Density is hereby considered not in terms of the ratio of people living per square meter, nor even as the number of dwellings in a given surface. Density is considered as a capacity for interaction, a measure of the amount of activities and relations that a space provides, a density of use. The existing tower is the starting point: it is by expanding it, filling it with new modular systems of a very ease at handling and installing, that the building offers a great spatial quality adapted to the highest contemporary standards.

**More Density, More Space, More Freedom of Use.** Finally, the projects developed by the French architectural practice Lacaton & Vassal - La Chesnaye and Grand Parc, in collaboration with Frédéric Brion and Christophe Hultin, present similar approaches to the notion of economy, a concept which is used here not as a goal but as a means to achieve a maximum of comfort. Both projects set up the premise of building more effectively, less expensively, as a way to build more square meters per person in order to allow for a broader freedom of use, a better and improved living condition. Density is, however, tackled and used in a different way in both cases. La Chesnaye aims to develop the leftovers of 20th century urbanism (parking lots, too large avenues, too big setbacks, etc.) in order to build additional dwellings, expand horizontally and increase density. The notion of a critical density appears as an asset and determines how successful urban life is in its share of infrastructures, services, etc. Grand Parc, on the contrary, do not propose a significant change in the number of dwellings on site -only a couple of new dwellings are added on the rooftop of the larger buildings- but horizontally expands the existing, creating extraordinary values in terms of comfort and versatility: the renovated apartments operate as veritable villas with large exteriors associated to them and a rich circulation system of a great freedom. One remarkable feature of this project is also the fact that the whole renovation took part without implying inhabitants relocation, who stayed in their respective apartments during the whole process. From different perspectives and contexts, both projects are exemplary in their approach and engagement with the future development of cities. They also show how identical premises and objectives can turn into different materializations depending on the existing context.

Every project has been redrawn and re-formatted according to the four main categories. This has been done to detach them as much as possible from their own particularities and styles. The goal is to provide a clear common structure that develops further key concepts related to transformation projects, setting forth the discussion and opening it up to a broader public.
DEUTSCHLANDSTUDIE 2016:
THE REALITY AND POTENTIAL OF
VERTICAL EXTENSIONS

Authors: Univ. Prof. Dr.-Ing. Karsten Ulrich Tichelmann
Dipl.-Ing. Dieter Blome

Technical University Darmstadt
Faculty of architecture, Institute of structural design & building physics
The “Deutschlandstudie 2016” is a research project that looks at the potentials of vertical extensions to satisfy German housing stock demands. Germany has an enormous need for affordable living space in large cities and University towns as well as in prospering municipalities. The estimates indicate a requirement of 1.1 to 1.3 million housing units in these regions. Building land for new projects is very scarce in congested metropolitan areas, unless the share of open spaces and green areas is reduced even further, yet these spaces are vital for the quality of living in densely populated urban structures.

The objective of the study was to examine the opportunities for creation of cost-effective living space in the regions where living space is most urgently required, the so-called unsaturated housing markets. The study focused on determining the potential for vertical extensions on existing multi-family residential buildings. The structural-constructional, typological, applicable building code regulations, planning factors and economic aspects were considered in the process of assessing the redensification of the existing fabric. The study focused on existing housing units built between 1950 and 1989.

The study proposes vertical extensions -and the use of modular, light-weight design- as a significant contribution to satisfy the forecast demands, which have grown dramatically in the recent years. This rise is due to multiple socio-demographic changes, resulting in a general need for new dwellings that affects almost 16% of the country’s surface.

Where and how should the urgently required living space be created? The “Deutschlandstudie 2016” came up with an impressive answer: “More than 1.5 million housing units can be constructed cost-effectively on the roofs of existing buildings”

Besides the fact that vertical extensions can provide the urgently required living space, they also offer the opportunity to improve the built environment with the highest architectural and comfort standards.

The densification potential of a district can be optimised by implementing good urban building practices which provide room for broader social interaction, enhance the quality of the living environment and preserves spaces dedicated to public facilities.

The study highlighted that the vertical extension measures could avoid the usage of free, public spaces -in the order of approx. 150 million m²- for building, development and transportation.

There are multiple legal and cultural factors that act as obstacles to this kind of development, such as the traditional building regulations, the needs to implement parking lots in equal numbers to the new dwellings, etc. The objective of the study is then double: to index potential situations for development and to point out the obstacles that brake the process.

Number of additional housing units by vertical extensions

- > 300,000
- 200,000 - 300,000
- 100,000 - 200,000
- 50,000 - 100,000
- < 50,000

Germany: 1,547,000
24 - Building typologies classified in construction period and characteristics

The developed analysis methodology allows the indexing capacities for extension as well as to evaluate their potentials in order to activate, to render profitable these latent situations. The result is a classification of the building stock according to construction periods, geometry and structural capacities of buildings, producing a national map of potential vertical extensions. Additionally, it also provides with the keys to understand, in technical and constructive terms, the newly identified potentials and their development feasibility.

These tools would also help to preserve our building culture: by analysing the potentials for densification on the existing building stock, it is also possible to detect cultural heritage assets, renewing them, highlighting and intensifying their relevance. The modern building techniques allow, on the one hand, preserving the appearance of ancient buildings and, on the other hand, to satisfy the needs of the inhabitants in matters of comfort and quality.

New living space easily created

The question of the most suitable building method is recurrent for every building project. However, with vertical extensions, there are specific constraints given by the nature of the existing, influencing the choice of construction method and materials.

The properties of modern lightweight construction and renovation offer a wide range of benefits in the context of vertical extensions.

Cost-effective

Urgently required living space can be implemented cost-effectively by implementing vertical extensions using lightweight construction methods, providing high levels of both sound and thermal insulation. The cost-effectiveness of vertical extension originates above all from the savings due to the purchase of a building site as well as ancillary and infrastructural development costs. Further aspects: there is no excavation work, no additional foundations slabs to be created and even the possibility of using the existing heating system for the new living space. In terms of economy and energy losses, the renovation and expansion of the existing building

25 - Technical and constructive requirements to identify a middle densification key

<table>
<thead>
<tr>
<th>storey additions</th>
<th>potential for storey additions</th>
<th>feasibility for storey additions</th>
</tr>
</thead>
<tbody>
<tr>
<td>stacked storey</td>
<td>60 % bis 90 % of building stock</td>
<td>Setbacks of stacked storeys are causing problems in transmitting the loads to the supporting structure. Mostly a distribution level is required, the additional ceiling with a grid.</td>
</tr>
<tr>
<td>1 storey addition</td>
<td>85 % bis 90 % of building stock</td>
<td>Good feasibility, load transmission is elaborate at complex structure systems, roof shapes an special roof tops</td>
</tr>
<tr>
<td>2 storey additions</td>
<td>35 % bis 45 % of building stock</td>
<td>Elaborate when the load reserves of structure systems and footing are exceeded</td>
</tr>
<tr>
<td>3 storey additions</td>
<td>2 % bis 5 % of building stock</td>
<td>Excesses of load reserves are acceptable at multi-storey-buildings with less than 5 storeys. Mostly an increase of footing and structure systems is required</td>
</tr>
</tbody>
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<tr>
<th>roof area MSB</th>
<th>year of construction</th>
<th>type of building</th>
<th>Ø roof area MSB with 3 up to 12 flats</th>
<th>Ø roof area MSB with 3 ≤ 13 flats</th>
<th>Ø roof area MSB East-Germany</th>
</tr>
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<tbody>
<tr>
<td>1950 to 1959</td>
<td>176 m²</td>
<td>reconstruction, city blocks, new buildings, linear developments</td>
<td>118 m²</td>
<td>110 m²</td>
<td></td>
</tr>
<tr>
<td>1960 to 1969</td>
<td>198 m²</td>
<td>linear developments, first large housing estates</td>
<td>153 m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970 to 1979</td>
<td>160 m²</td>
<td>linear developments, multi-story-buildings (MSB) as point buildings</td>
<td>180 m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1980 to 1989</td>
<td>170 m²</td>
<td>Change from urban extension to urban renewal</td>
<td>170 m²</td>
<td>144 m²</td>
<td></td>
</tr>
</tbody>
</table>
stock provide bigger potential savings of grey energy than demolishing and reconstructing.

**Short construction period**

Building elements and room modules can be prefabricated using lightweight construction methods. This will reduce the construction period for wall and ceiling components as well as interior fittings. Furthermore, the lightweight construction method utilising drywall ensures a rapid building process. The available materials, lightweight building systems and components that are integrated into innovative prefabricated elements and modules are easily replicable and allow fast and large scale market uptake.

**Space gains**

Modern lightweight construction facilitates the required qualities in terms of fire resistance, sound insulation and thermal insulation thanks to leaner building components. The reduced thickness of highly insulated exterior components also enables even greater usage of space.

**Improved energy use**

Most of the energy losses happening in the existing building stock are due to heating. By creating new living space through vertical extensions, the refurbishment of the existing building stock and its upgrading becomes more economic. Energy-efficient living space has become a contemporary standard in housing construction. A highly insulated vertical extension influences the energy-efficiency of the entire building and this is possible merely through the “no-cost” thermal insulation upgrade of the upper storey floor.

Thus, vertical extension provides an integrated solution for a fast and reliable in-depth renovation. It is affordable and can reach the best low-energy standards.

**Flexible floor layouts**

The low self-weight of lightweight construction enables large span widths for ceilings and roof construction. Accordingly, the interiors can be individually designed to residents requirements. Non-load bearing drywall partitions allow for flexible design of the floorplan and allow for an easy adaptation during subsequent transformations affecting the layout of rooms.

**Building while occupied**

Extending vertically while the building is still occupied is rendered possible by selecting the right building construction method and a high level of prefabrication. Thanks to modern drywall and lightweight construction, the annoyance to occupants due to noise and dust can be kept to a minimum.

**Extended qualitative urban life**

The quality of urban life can be measured according to the heterogeneity of districts in terms of their inhabitants and the activities they provide. The expansion, the addition, of extra units to existing communities can only enrich them and optimise the use of existing infrastructures. The impact as urban renewal projects triggers these kind of initiatives -the vertical extensions- is very high, especially when combined with the use of lightweight construction techniques: it provides cities with a new tool to enrich urban life and heterogeneity, to preserve cultural assets while updating them to contemporary standards and to satisfy an increasing demand for affordable housing.

Present times provide those involved in the construction sector with new challenges. It is necessary to create sustainable, affordable strategies that cope with creating solutions for social coexistence. These strategies require a careful consideration of what already exist, inventive economic plans as well as the deployment and testing of new technologies.

It is about changing the nature of the offer in order to develop and create a new symbiosis.

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Deutschlandstudie 2015 [published in German], Potential living space through vertical extension, Issued by Technische Universität Darmstadt, ISP Eduard Pestel Institut für Systemforschung e.V. Hannover, February 2016

Vertical Extensions, Potential for new living space in inner-city locations and emerging regions, Bundesverband der Gipsindustrie, www.gips.de, online publication, September 2016
VERTICAL EXTENSION,
BRUNFAUT TOWER
BRUSSELS, BELGIUM

Location: Brussels, Belgium
Year: 2013
Status: In process
Client: Le Logement Molenbeekois
Architects: Dethier Architecture and A229
Structural Engineer: Ney & Partners
MEP Engineers: Arcadis
Total surface: 11,150 m² (plus 1,000 m² of exterior surface)
Net Cost: 18,100,000 €
“Increasing density without harming our valuable urban green spaces”

Daniel Dethier
The Brunfaut tower was designed by Julien Roggen and completed in 1965. At that time, the tower had a deep aesthetic value based on its proportion, the purity and temperance of its geometry and modern composition. The tower was a visible landmark in the neighbourhood until the surrounding towers matched it in height and accentuated its disconnection with the rest of the city and the public domain.

However, as it happened with many other public buildings of the time, the Brunfaut tower suffered from multiple maintenance problems, aging and deteriorating. In addition to this, its structural condition was very precarious as, in order to lower construction costs, the bearable load of the whole was reduced to its strict minimum.

The tower, after the transformation, will appear -as it was the case in the past- as a signal, as a landmark in the neighbourhood. Its transformation implies an attitude of respect to the existing and economy of means in both cultural and physical terms. Instead of demolishing and building afterwards, updating, repairing and extending what is already there. This attitude extends to the re-qualification of the urban space as well, freeing it of all the existing barriers and constraints and activating it with new activities.

The transformation project tries to extend and elaborate on the same original principles that lead to the construction of the tower: rationality, precision and radicalism.
The transformation of the tower barely changes the number of dwellings—it passes from 97 to 98. The extra amount of surface created is redistributed in order to increase the surface per dwelling and adapt the typologies to the new demands of the inhabitants. Additionally, the creation and re-repartition of extra surface, allows the modification of the disposition of units per floor and provides natural light and exterior views to the communal spaces and main corridor.

The improvement in terms of density of the project does not affect the typical ratio of inhabitants per square metre. The project developed by Dethier Architecture redistributes surface in order to improve the conditions of the living environment as well as it improves the common areas.

The project liberates the ground floor of all constraints, promoting vertical extension instead of the horizontal one, in order to keep the public space open and available. The connection of the building with the public domain is also improved with the introduction of larger glazed partitions that connect visually the interior and exterior of the building. Additionally, new uses activate the public spaces and trigger a broader sense of community: public gardens on the rooftop, water features and playgrounds on the ground floor, bicycle rooms and spaces for repairing them near the entrance, as well as large rooms available for the neighbours on the intermediate deck. These additions create a larger density of use which cannot be quantified in terms of ratios but expresses the potential for occupation and interaction that a transformation project entails.
The key challenge of the project is to adapt the existing structure to the current standards in terms of environmental, security and spatial quality. The apartments are meant to be bigger, to offer different possibilities and diverse typologies ranging from small studios to five-room family units. They also fulfill security requirements and provide maximum thermal and acoustic comfort with the improved economy of energy costs. All the requirements in terms of surface, security and comfort are easily treated thanks to the addition of the new structure that bridges the existing tower and allows for the vertical extension. This addition offers the possibility of improving the performance of the envelope and the storeys’ slabs while expanding the dwellings.

The will to optimise interior comfort is also present in the creation of a multifunctional loggia per apartment that serves alternatively as a terrace, a winter garden, a closet or a play room. These loggias organize the distribution of the units and the communal spaces around. Aesthetically, these spaces do not affect the exterior image of the existing tower - as the addition of exterior balconies might have done - and contribute to the bioclimatic performance of the envelope facilitating cross ventilation as well as acting as a buffer tempered zone.

In terms of soundproofing and fireproofing, the project replaces the existing slabs - single sheet metal deck slabs with a dry screed - by solid wood ones. The new slabs offer a better performance due to their inertia and non-combustibility.
The existing building is a fifty one meter high, seventeen-storey tower with a steel structure. The load calculations show that the original structural design was adjusted to a maximum in order to minimize construction costs. As a result, the structure does not provide with any leverage in terms of supporting additional loads and offer very limited ceiling heights. The existing slabs -metal deck type- were also very compact and with a very reduced structural span providing a very limited fire resistance. These facts are very important for the transformation project as any proposition had to take in account the load carrying to the ground and the creation of new foundations. All these structural particularities are very important considerations as one of the main decisions of the transformation project was to reinstate the iconic condition of the tower by regaining height in regard to the neighbouring constructions. This decision -increasing the height of the tower- implied also an augmentation of the loads that the structure would support, which was technically impossible with the existing structural system. This is the reason why the idea of a ‘structural bridge’ is adopted: it allows the construction of four extra floors and a terrace upon the existing ones, independently of the structural constraints of the original tower.

The transformation project adopts the given constraints and transform them into design strategies, turning the eventual ‘disadvantages’ into real assets. This is the kind of synergy that transformation projects can trigger: assuming culturally and spatially rich existing conditions, reinforcing and improving them with contemporary interventions.
In addition to the construction of the aforementioned ‘structural bridge’, the new structure collaborates with the old one in the load carrying of the whole. The resulting space between the old and the new structural system allows for the redesign of the apartments typologies, augmenting the richness of possible occupations and the versatility of the layouts: larger, broader, providing more diverse spaces that can adapt to contemporary demands on urban living.

The structure of the existing tower is redesigned and replaced by lattice girders that allow the transfer of the new loads of the extension. Given the relative narrowness of the tower, these girders are reduced in size and are able to fit into a regular floor height, therefore, not compromising the interior spatial layout. The design of the girders is made to allow the passage of a person through, at least, three different places.

On top of the existing structure, once inside the ‘structural bridge’, the new columns are laid out according to the structural axis already in place. This allows for a structural clarity and serialisation on the way the different floors could provide space for evolution.

The addition of four extra floors and a terrace creates an extra amount of available surface that allows for the qualities of the interiors provide to be reconsidered without reducing the number of existing units. There are different design strategies in regard to the apartments and the common spaces and circulations.

However, the objectives are common to both of them and include:
- An attitude based on the economy of means
- The respect of the original structural grid and their main axis
- A search for compactness in the layout of MEP services and cores
- A minimization of the space specifically dedicated to circulation

The extra surface created also allows extra values to the existing such as natural light to most of the common spaces or the possibility of naturally ventilating all the interiors. These features add on top of the improved performances of the envelope creating a symbiotic approach to sustainability based on the combination of two complementary situations.
VERSATILITY

The transformation project exploits the capacity that the combination of both structural systems provide. Both systems, with their particularities, provide a framework in which different situations and modes of appropriation might occur. This versatility is given by the accuracy and economy of means of the original design, implemented by the modularity and inventiveness of the additions.

The tower, after the completion of the transformation project establishes different categories with different opportunities for evolution and transformation: the fixed structural elements and cores that will barely evolve, serve as veritable anchoring points for the evolution of the moveable, changeable, light and multi-performance partitions.

The partitions, made of gypsum drywall components, are continuously recyclable and easily adaptable to the new demands in terms of dwelling types, new uses or new performative standards. The modularity of the systems allows for a higher speed of installation, resulting in lower installation costs. The combination of the two invites to imagine the tower as a witty device that continuously reinvents itself according to the evolution of the demands.
HOUSING TRANSFORMATION AND DENSIFICATION, SAINT NAZAIRE, FRANCE

Location: Saint Nazaire, France
Year: 2008 - 2016
Status: Completed
Client: Silène
Architects: Lacaton & Vasal Architects with Mabire et Reich (executive architects)
Structural Engineer: CESMA and PLBI
MEP Engineers: AREA and CARDONNEL
Total surface: 10,300 m² (3,900 m² renovation + 6,400 m² new construction)
Net Cost: 6,600,000 €
“The transformation, extension and densification of the block is more cost effective than the demolition of the forty existing flats and the reconstruction of eighty new ones. Ultimately it also results in more generous apartments than the standards generally produced by mass construction.”

Jean Phillipe Vassal
This project occurs in the La Chesnaie area, in the city of Saint-Nazaire, an emblematic zone in terms of 1970’s urban planning. The area is ideally situated between the seashore and the city centre. It potentially contains many attractive destinations for locals: a big central park, a set of beaches and large open spaces to walk by, multiple amenities, qualitative housing units, a good network of public transportation... Despite these conditions it has gradually lost its attractiveness as a place to live in. The renewal project called “Ville-Ouest” is the plan that the municipality is setting up in order to revitalize the development of this area, including transformation projects like this one.

The project, a combination of both transformation and densification, fights against the general tendency that encourages demolitions as a tool for urban renewal. These systematic demolitions are carried out independently of the existing potential of areas like La Chesnaie. The values that this area presents are the assets on which this project proposes to build upon. The project aims to trigger a long-term re-qualification of the conditions of urban living through the radical transformation of forty apartments in one of the existing high-rises. It also increases the density by creating forty additional dwellings grafted onto the gable ends of the building as well as taking advantage of the surrounding vacant lots.
The transformation, extension and densification of the existing building is much more cost effective than demolishing the forty existing flats and reconstructing eighty new ones. It also provides the existing apartments with exceptional and more generous conditions than the ones that new constructions propose.

The project intends to operate as a triggering device for further densification as it prefigures the total transformation of the area by transferring to other neighbouring buildings the same principles of transformation and densification. Adopting this radical attitude would allow the construction of 258 new dwellings and the qualitative transformation of 312 existing ones. This process of densification would entail the creation of new local amenities and services without compromising the biggest reserve of public, empty land, which is the large central park.

The densification process seeks to balance urban conditions in this kind of areas as it provides a better equilibrium between the existing latencies on site, potential attractors of population at a larger scale and the empty lots that remain underused and undervalued until becoming undesirable.
COMFORT

The enhancements in terms of comfort can be grouped into two main categories: the surface increase per dwelling and the spatial qualities improvements.

The extra surface that each dwelling gains is important not only as it enlarges the unit itself but also because it allows to reconfigure and question the typical layouts of residential typologies. Each existing apartment profits from an increase in surface area of 33m² as well as the addition of a winter garden and a balcony. These additions provide also new options in terms of circulation and, therefore, modes of appropriation. It increases the freedom of use of the dwelling. These operations do not imply any major structural works nor affects the core of the building itself.

The additions that result on the surface gain work as a two meter wide climate control device that surrounds both the existing building and the new constructions. This device consists on a set of moveable transparent panels that create a covered, exterior, winter garden. The winter gardens alternate with a 1m wide balcony, installed in front of the original façade. The newly constructed apartments provide similar features including large liveable spaces, winter gardens and continuous balconies.

![Diagram](https://via.placeholder.com/150)

The table below illustrates the transformation of the apartments:

<table>
<thead>
<tr>
<th></th>
<th>T4 OLD</th>
<th>T4 NEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Surface</td>
<td>179.09 m²</td>
<td>199.99 m²</td>
</tr>
<tr>
<td>Winter Garden</td>
<td>-</td>
<td>11.99 m²</td>
</tr>
<tr>
<td>Usable Surface</td>
<td>179.09 m²</td>
<td>112.79 m²</td>
</tr>
<tr>
<td>Balcony</td>
<td>5.5 m²</td>
<td>13.1 m²</td>
</tr>
</tbody>
</table>

The possibility of demolishing in order to provide adapted access for handicapped users.

![Diagram](https://via.placeholder.com/150)
The structure of the existing tower is a very rigid but robust load bearing walls system with no relevant particularities. The quality of the construction is relatively low in terms of environmental conditions. As a matter of fact, and as it happens in many constructions of the same period, there is a massive presence of asbestos in the exterior façade. The relation with the exterior is reduced to a very little amount of small windows and a single balcony with an access from the living room. The apartment typology is very rigid due to the kind of structural system it has, load-bearing walls that constrain and predetermine uses and circulation options.

The proposal explores the possibilities of, first, extending the existing tower by adding self-supported, industrialised structures and, then, using these extensions as a scaffolding, improving the inner qualities of the apartments. The old windows are systematically replaced by larger bays allowing to continually circulate between the interior and the covered exterior that the extensions provide. This freedom of movement is the key to understand how fundamentally the residential typologies change and the amount of possibilities that this intervention opens. Additionally, new constructions occupy the empty parts of the plot, increasing the density of the neighbourhood and reinforcing proximities, adjacencies and community life.

Finally, the added continuous balconies serve to remove all asbestos presence in the façade as well as to improve the thermal performance of the envelope. This thermal performance takes advantage of the greenhouse warming effect that the light polycarbonate panels installed produce. The result is a tempered buffer zone that limits the temperature difference between the exterior and the interior and, therefore, the potential energy exchanges.
The different interventions - the additions, the transformations of the existing structure and the new constructions - produce a symbiotic effect on the existing tower and, as a result, an extraordinary set of qualities in the renovated apartments. The previous apartments – rigidly designed, constrained to a single use and with, virtually, no room for evolution - are transformed into dwellings with similar capacities to a single-family house: open, in relation with a protected, usable exterior space and full of possibilities of use.

The process of transformation takes the general concern on the energetic performance of the buildings -and the extended will for their renovation- as a way to reconsider the qualities of contemporary urban living. It succeeds in improving the thermal insulation of the façade, in reducing the costs of heating or ventilation but, more importantly, it lays the focus on top of the quality of living that urban settlements provide.

The qualities that this kind of project propose are given to the inhabitants as a device to design their own way of living. It provides a continuous freedom of use, the possibility of circulate freely, the choice to grow a flower garden at the threshold of your living-room on the 7th floor, the possibility of sleeping outside during the mild summer nights. These capacities - the new ones but also the ones which were already there in latency - are the real assets of a project of this kind in regard to traditional, newly-constructed housing developments.
TRANSFORMATION OF 530 DWELLINGS, BLOCK GHI
GRAND PARC NEIGHBORHOOD, FRANCE

Location: Bordeaux, France
Year: 2011 - 2016
Status: Completed
Client: Aquitanis O.P.H. de la communauté Urbaine de Bordeaux (CUB)
Architects: Lacaton & Vassal Architects, Frédéric Druot Architecture and Christophe Hutin Architecture
Structural Engineer: SECOTRAP and CESMA
MEP Engineers: SECOTRAP and CARDONNEL
Total surface: 67,710 m² (44,210 m² renovation + 23,500 m² new construction)
Net Cost: 28,400,000 € (including the new apartments on the rooftop)
“Through this project, the social housing, which is often pictured as a heritage lacking qualitative conditions for living, set an example of a relevant and economic transformation, producing generous, pleasant and highly performative dwellings”

Jean Phillipe Vassal
THE EXISTING

The project consists of the transformation of three modernist social housing buildings, all of them fully occupied, inside the ‘Cité du Grand Parc’ at Bordeaux. The project is part of a larger renovation program that deals with this 60’s modernist district counting with more than 4,000 dwellings.

The Grand Parc is a typical modernist development which tried to develop ideal suburban communities around French metropolis. These communities would provide modern environments, mass produced, designed with an systematic approach and a certain purity. Despite its faults, the Grand Parc is an exceptional place, close to the city, with a higher sq.m/person ratio than the rest of the city and, due to the flatness of the local topography, with a 360° unobstructed panoramic view.

The three buildings G, H and I, range from ten to fifteen storeys and gather a total of 530 dwellings. The three blocks needed major repairs and renovation once Wolition was definitively ruled out. However, by their location and their spatial configuration, these buildings host the extraordinary capacity to be transformed into very beautiful and comfortable dwellings of an outstanding contemporary quality.
This operation does not imply any particular augmentation on the density of dwellings or number of people per m². However, it does change the amount of space allocated to each dwelling, almost doubling it. Despite the fact that no extra dwellings are created, the transformation provides a full array of new possibilities of use and eventually triggered a major renovation of the public spaces between the blocks.

Yet population or dwelling density did not change, the density of use, the capacities for communal interaction increased exponentially.

These new uses could easily drive into a process of gentrification, where local population is displaced due to rent rises -derived from the indirect transfer of transformation costs for the dwellers- However, the architects and the company in charge of the operation, rental and maintenance of the site, agreed that all the transformation works -neither the costs nor the taxes for surface augmentation per dwelling- would impact the rents that the inhabitants are used to paying. This agreement, which can be considered a design decision allows every inhabitant to remain in their apartment if they want to.

Both facts -the multiplication of potential uses and the agreement for rent control- favour the creation of community life and expand the scope of influence of the project.

“To consider a flat as a villa: more space, more comfort, an available exterior space and continuous possibilities of evolution”

Jean Phillipe Vassal
“Organising horizontally and vertically desirable spatial conditions for a local population; to give that population more space while improving the condition of urban life”

Jean-Philippe Vassal
The project of transformation sets its starting point at the interior of the dwellings in order to provide them with as much quality and comfort as possible. The process begins by inventoring with precision and care the existing qualities: on one hand, those that should be preserved, on the other one, those which are missing, those that need to be provided.

The addition of winter gardens and balconies extend the existing. They give the opportunity to each apartment to expand, to enjoy a larger amount of space, a larger amount of natural light, a larger mobility as well as larger and broader views.

From the inside, the view on the city of Bordeaux is panoramic and unique due to the height of the blocks and the flatness of the topography of the city. It is an extraordinary living situation. The additions operate as livable tempered buffer zones that help to improve the thermal insulation capacity of the envelope. The winter gardens and covered terraces reduce the differences of temperature between the exterior and the interior conditions.
1. EXISTING

2. ADDITION OF PRE-CAST MODULES

3. DEMOLITION OF FORMER FACADE AND ADDITION OF NEW GLAZING

4. ADDITION OF WINTER-GARDEN ENCLOSURE

5. FINAL RESULT

EXISTING STRUCTURAL CAPACITY
1. ADDITION OF PRE-CAST MODULES
2. DEMOLITION OF FORMER FACADE
3. FINAL RESULT
61/62/63
64/65/66
The extensions widen the space of use and enlarge the mobility inside the dwellings giving the opportunity to the inhabitant, as in a single family house, to have a private outdoor space. The apartments open onto large winter gardens and balconies that offer pleasant outdoor spaces. The additions vary according to buildings’ orientations and their internal distribution. The depth goes up to 3.80m offering endless possibilities for appropriation or redistribution -as it is the case with the single-oriented units on building G. The existing windows are replaced by large glazed sliding doors, which connect every room of the dwelling to the winter garden. The interiors of the dwellings are renovated and adapted to contemporary standards in terms of appliances and MEP systems.

Additionally, every set of 45 dwellings which cluster around a single staircase and a lift, are equipped with new and larger elevators plus extra ones, added on the back in order to improve the vertical flow.

On the ground floor, the access points to the halls are renovated and transformed into more open and transparent spaces, improving the visual connection with the public domain. As a result, the front gardens are also replanted and taken care of. New uses will emerge from these re-stored conditions.

This transformation project shows how social housing, an often criticised and vilified field of experimentation, sets an example of a relevant and economic transformation that produces outstanding living conditions with a tremendous capacity for evolution. It moves from an existing condition prejudged as lacking acceptable living qualities and perceived in a negative way into a set of generous, pleasant and extremely performing dwellings. The result is innovative at all degrees: from a typological point of view, on its approach to the economy of construction and on its consideration of the buildings as devices for further evolution and flexible adaptation. Most importantly, it reformulates ideas such as comfort, pleasure and in a broader sense, the idea of urban living.
BUILDING UPON THE EXISTING:
A CONCLUSIVE CONCLUSION
IN THE SEARCH FOR A NEW PARADIGM
In the last decades, the use of the word sustainability -and all its possible evolutions, applications and afteraths: recyclability, zero waste, design for deconstruction...- has invaded all domains. It has been used alternatively as a politic decoy, as a marketing strategy or as a tag to qualify the “goodness” of certain social positions. Despite its abuse and overuse, the idea of adopting a structural and meaningful idea of sustainable development is the only way in order to assure the future of coming generations in, at least, equivalent conditions to the ones we live in nowadays.

The problem is that the deeper impact of this notion remains in doubt since its first apparition in the Brundtland Report of the United Nations in 1987. The idea has been gradually shaped at a political level -with great and extremely relevant measures and international agreements- but it is far from having a visible, real, game-changer impact in people’s life. Yet, the paradox is that we need, very urgently, this massive adhesion to this way of understanding our life in common or it will be already too late. The reasons for this disconnection are multiple. However, one could easily agree that our chronic impossibility to promote, expand and support a sustainable attitude that faces contemporary challenges in a meaningful manner is the proof that we need to find new fields of operation for this new paradigm.

Sustainability should not imply a dismiss of previous experiences, a reset from the past or a tabula rasa in favour of a new technocratic sustained development. It should not be perceived as something simplistic or reductive that leads to homogenization.

Sustainability should not be a ultimate goal in the form of a certificate of excellence nor a direct means to achieve something.

Sustainability should be an attitude that has to build upon what we already have. It has to be able to trigger a communal attachment to it. It has to elaborate a larger framework that provides more quality, more freedom and more diversity with no exception, so anyone can find his or her own place at a highest qualitative level.

It is in this sense that we would like you the reader to evaluate not only the architectural value of the propositions here included but also the political and social implications of what transforming, extending, expanding, adding on top of the existing means. It is in this context that we would like to advocate for a higher dose of audacity in order to support this kind of strategies, projects and attitudes that wisely look at what it is already there as the foundational principles to trigger the change of paradigm that we need.

The act of accepting, improving, updating and expanding the existing is radical, challenging and deeply contemporary: it demands to discard received ideas, to develop new tools and new systems in order to adapt to new demands. It questions the core of our assumptions.

May this book -and the ideas, projects and buildings here included- proof the relevance of a new paradigm that fully embraces the richness of the existing. The result would be a more respectful, more affordable, more universal idea of what sustainable development is.
This book has been produced with the generous financial support of: