Edition Axel Menges GmbH
Esslinger Straße 24
D-70736 Stuttgart-Fellbach
tel. +49-711-5747 59
fax +49-711-5747 84
AxelMenges@aol.com
www.AxelMenges.de

Avi Friedman
Adaptable Homes. Convertible Dwellings and Furnishings
233 x 284,5 mm, 144 pp. with 230 illus., hard-cover, English
ISBN 978-3-86905-048-5
Euro 69.00, £ 59.90, US$ 78.00

Rising housing and energy costs, the emergence of the non-traditional small household and an increase in the number of seniors have contributed to a renewed interest in adaptable dwellings. These designs can be defined as units or furnishings that permit change of space or function at any time. With their popularity rising rapidly around the world, people are becoming aware of the environmental and budgetary implications of owning a very large single-family home, especially when some spaces in these homes are hardly ever used. Notable additional advantages of adaptable homes are lower property taxes and construction costs, and time savings through possible prefabrication. To be efficient, adaptable dwellings must be carefully designed since minor decisions can have a large impact on their use.

Light, boundaries, circulation, choice of materials and furnishings are some of the tools that can be used by designers to resolve challenges and expand spatial perception. Therefore, a good adaptable design should not only be versatile and efficient but also avoid simplicity and dullness.

Japanese architects, such as Shigeru Ban, have pioneered solutions to these problems by using curtains or shutters to separate between outdoors and indoors. Such fixtures can be opened during the day to let in light and fresh air but can be closed at night. Those designers also encourage the inhabitants to engage with the outside by creating large, easily accessible rooftop spaces that can used for outdoor seating, for example.

When partitions must be installed, transparent ones are recommended since they still permit the dispersal of light. Moveable partitions, or sliding panels, are also useful in defining spaces since they allow one to temporarily redefine small spaces according to need. Lastly, an open floor concept with large exterior openings permit views of the outside which, as noted above, can increase the perception of a house's size. Increasing the floor height can greatly expand space without enlarging the floor area.

The book displays a collection of outstanding innovative residential projects and furnishings made to accommodate the daily or yearly changing living space needs of occupants.

Avi Friedman received his Bachelor's degree in architecture and town planning from the Israel Institute of Technology, his Master's degree from McGill University, and his Doctorate from the University of Montréal. At McGill, where he is a full professor, he cofounded the Affordable Homes Program. He also holds a visiting professor position in Lancaster University in the UK. He is the author of 25 books, the principal of Avi Friedman Consultants Inc. and the recipient of numerous awards including the Lifetime Achievement Award from Sustainable Buildings Canada and the World Habitat Award.

Distributors

Brockhaus Commission
Kreidlerstraße 9
D-70806 Kornwestheim
Germany
tel. +49-7154-1327-9219
fax +49-7154-1327-13
menges@brocom.de

Gazelle Book Services
White Cross Mills
Hightown
Lancaster LA1 4XS
United Kingdom
tel. +44-1524-528500
fax +44-1524-528510
sales@gazellebookservices.com

Simon & Schuster
Distribution Services
1230 Avenue of the Americas
New York, NY 10020
USA
USA: purchaseorders@simonandschuster.com
Canada: canadian.orders@simonandschuster.com

Rising housing and energy costs, the emergence of the non-traditional small household and an increase in the number of seniors have contributed to a renewed interest in adaptable dwellings. These designs can be defined as units or furnishings that permit change of space or function at any time. With their popularity rising rapidly around the world, people are becoming aware of the environmental and budgetary implications of owning a very large single-family home, especially when some spaces in these homes are hardly ever used. Notable additional advantages of adaptable homes are lower property taxes and construction costs, and time savings through possible prefabrication. To be efficient, adaptable dwellings must be carefully designed since minor decisions can have a large impact on their use.

Light, boundaries, circulation, choice of materials and furnishings are some of the tools that can be used by designers to resolve challenges and expand spatial perception. Therefore, a good adaptable design should not only be versatile and efficient but also avoid simplicity and dullness.

Japanese architects, such as Shigeru Ban, have pioneered solutions to these problems by using curtains or shutters to separate between outdoors and indoors. Such fixtures can be opened during the day to let in light and fresh air but can be closed at night. Those designers also encourage the inhabitants to engage with the outside by creating large, easily accessible rooftop spaces that can used for outdoor seating, for example.

When partitions must be installed, transparent ones are recommended since they still permit the dispersal of light. Moveable partitions, or sliding panels, are also useful in defining spaces since they allow one to temporarily redefine small spaces according to need. Lastly, an open floor concept with large exterior openings permit views of the outside which, as noted above, can increase the perception of a house's size. Increasing the floor height can greatly expand space without enlarging the floor area.

The book displays a collection of outstanding innovative residential projects and furnishings made to accommodate the daily or yearly changing living space needs of occupants.

Avi Friedman received his Bachelor's degree in architecture and town planning from the Israel Institute of Technology, his Master's degree from McGill University, and his Doctorate from the University of Montréal. At McGill, where he is a full professor, he cofounded the Affordable Homes Program. He also holds a visiting professor position in Lancaster University in the UK. He is the author of 25 books, the principal of Avi Friedman Consultants Inc. and the recipient of numerous awards including the Lifetime Achievement Award from Sustainable Buildings Canada and the World Habitat Award.

069.00 Euro
059.90 £
078.00 US$

ISBN 978-3-86905-048-5

9 783869 050485 0 7 8 0 0

Avi Friedman Adaptable Homes Menges

Avi Friedman

Adaptable Homes

Convertible Dwellings and Furnishings

Avi Friedman

Adaptable Homes

Convertible Dwellings and Furnishings

Edition Axel Menges

Contents

ISBN 978-3-86905-048-5

Printing and binding: Graspo CZ, s. a., Zlín, Czech Republic

Editing: Dorothea Duwe, Nora Krehl-von Mühlendahl
Design: Axel Menges

Dust jacket: Pied-à-mer by Michael K. Chen; photographer: Alan Tansey

Edition Axel Menges GmbH
Esslinger Straße 24
D-70736 Fellbach
www.AxelMenges.de
AxelMenges@aol.com

Acknowledgements

The design of adaptable and convertible dwellings was the focus of my practice and research work for long and the topic of my doctoral dissertation. Over the years, my work included collaboration with numerous colleagues, assistants and students who directly and indirectly inspired the generation of the ideas expressed here. My apology if I have mistakenly omitted the name of someone who contributed to this book. I will do my best to correct an omission in future editions of this book.

My research assistant Natalie Qiu was instrumental in background research for the writing of the chapters and identifying some of the projects.

This book could not have been completed without the contribution of my summer intern Ashley Yeung. Ashley identified many of the projects, described them, reached out to their authors to request material and once received prepare them for publication. Her hard work, dedication, exceptional organizational and writing skills are very much appreciated.

I would like to express my gratitude to Nora Krehl-von Mühlendahl, Dorothea Duwe and Axel Menges at Edition Axel Menges GmbH for ushering the book in and for their patience and guidance in seeing it through.

Thanks to McGill University's School of Architecture where the genesis of the ideas expressed here, and my own research was carried out.

Finally, my heartfelt thanks and appreciation to my wife Sorel Friedman, Ph.D., and children Paloma and Ben for their love and support.

Collection of different apartment configurations in Yojigen Poketto.
Yojigen Poketto, Madrid, Spain. Design: elii.

Preface

Adaptability to unforeseen events is becoming a paramount consideration in design, especially in housing. With climate change, natural resources depletion, fluctuating financial markets, and shifting demographics trends, it is becoming imperative that homes would be sustainable and capable of adapting. This book explains the benefits of adaptable housing and utilizes international case studies to demonstrate methods of achieving it.

The term Adaptable Homes is open to different interpretations. Though most think of homes with rapidly convertible aspects, there are three main types of adaptable dwellings. Firstly, some homes can be considered adaptable due to the choices that are given to their buyers in the pre-occupancy stage. Homes that are designed as rudimentary shells and can be customized and completed according to owners' lifestyles and budgets are considered adaptable. Houses that offer this option can be outfitted according to a pre-occupancy choice catalogue of plug-ins and finishes.

Another, more common type of adaptation is post-occupancy adaptation. The most common example are homes that can be modified quickly and without complex alteration. This category tends to involve movable walls, convertible furnishings, and multipurpose structures. That said, there are some other post-occupancy changes that fall under the umbrella of adaptable housing as well. Some adaptable homes have rooms that are dimensioned to allow multiple interior configurations. In these, measurements may be selected so that a bed and couch could fit, or the room could easily become a lounge or home office.

Some homes, especially those designed for seniors that allow aging in place, are built initially to allow mounting of certain assisting fixtures. These are permanent fixes that allow the home to adapt to reduce of the occupants' need to move. An example of this is reinforced walls for the mounting of large shelves or grab bars. Aside from that, reinforced houses are also designed to help first-time homeowners by creating inexpensive, barebones units that can be adapted and expanded as needed either by adding on or adding in. The small, simple nature of the houses makes them affordable, helping those on a tight budget to acquire a home that will grow according to their needs.

Adaptability in housing does not need to be complicated or costly. Though some examples throughout this book will exhibit carefully designed and engineered solutions, the above adaptability considerations can be incorporated with careful plan-

ning into any home. Open-concept layouts, movable partitions like curtains, rolling furniture, or even custom-built furniture are all changes that one can make to their home even after it is built and lived in to make it more suited to their current lifestyle. This book offers readers a variety of methods that are commonly used in adaptable housing and inspire the incorporation of simple changes into any home. Each of the six chapters discuss a different trend in adaptable systems that helps address unique issues that call for adaptability using international case studies as examples.

The first chapter discusses some of the environmental, economic, and socio-demographic changes and challenges that make adaptable housing necessary. It focuses on projects that embody some of the main themes seen throughout adaptable housing and why they would be needed, setting the scene for the kinds of innovations that will be illustrated later in the book. Chapter 2 focuses on adaptable housing solutions that prioritize sustainability, whether through demolition prevention, material reuse, or something else entirely. Chapter 3 relates to the growing trend of micro housing, exploring the use of adaptable housing strategies to make small apartments comfortable. In many of these projects, transforming furniture is especially used to save space, reduce clutter, and allow for fewer divisions that block light in small spaces. Chapter 4 focuses on homes that have movable walls. As wall divisions can lock a home into a specific layout and rooms into selected programming, homes with movable and demountable walls can allow for changes and flexibility. Some projects through storage, or curtains used as room division, or others with entire wall panels that move will be shown. Chapter 5 sheds light on projects that utilize particularly inventive furnishings that change. Finally, as our society ages, a growing importance is placed on people being able to grow old in their homes rather than live in an assisted living facility. Chapter 6 focuses on homes that have been renovated or designed to allow adaptability to the needs of seniors.

There are many ways to make a home adaptable, and a variety of reasons one would choose to do so. Adaptable homes are versatile, can be designed as a more sustainable alternative, can save money by better utilizing space and preventing the need to move house, and more. This book articulates some of the changes and benefits adaptable living can bring to one's home through beautifully designed projects for clients from every walk of life.

Different coloured lights affect spatial perception in Appartement Spectral, allowing for various different experiences across a single space.
Appartement Spectral, Paris, France. Design: Nicolas Dorval-Bory and Raphaël Bétillon.

1. The merits of adaptable living

Adaptability has become an essential characteristic in today's rapidly changing society. In the context of housing, the needs and circumstances of residents are constantly evolving. This chapter explores how housing has risen to meet the challenges of climate change, resource depletion, housing affordability, and socio-demographic transformations, all of which underscore the urgent need for adaptable living solutions. By examining these multifaceted issues, one can highlight the necessity for life cycle transformation and the creation of adaptable spaces, particularly in response to contemporary social trends such as working from home. Through an exploration of international projects that exemplify these trends, a comprehensive understanding of the importance of adaptability in housing can be provided.

Defining adaptability in housing

The term »adaptability« literally means the ability to adjust or be adjusted (Gu et al., 2009). In other words, a change that makes something acceptable or appropriate for a certain purpose or situation. Adaptability is an approach in product design that focuses on generating innovations that can be readily adjusted to meet various requirements (Gu et al., 2009).

In the field of architecture, residential adaptability refers to the ability of living spaces to change and evolve in response to the occupants' changing needs over time (Askar et al., 2021). This concept encompasses flexibility in design, functionality, and usage, allowing spaces to serve multiple purposes and accommodate various life stages. Key characteristics of adaptable housing include modular design elements, movable walls, and multifunctional furniture. These features enable residents to reconfigure their homes easily to suit changing requirements, such as growing families, aging in place, or the shift towards remote work.

Why our times call for adaptable housing?

Demographic changes

The world's age pyramid is being reshaped due to consistently low birth rates and increased life expectancy; a noticeable shift towards a more aged demographic structure is already being seen in many countries. The percentage of working-age individuals is decreasing, while the proportion of retired individuals is increasing. As the proportion of the elderly population has risen in recent years, there has been an increase in demand for flexible housing that meets the physical and social needs of older people. For example, the population of the European Union was estimated to be 448.8 million individuals, with almost one-fifth (21.3 percent) of them being 65 years old or older in 2024 (Statistics Explained, 2024). In Asia, Japan has 30 percent of its population over 60 (World Health Organization, 2022). By 2030, one in six people globally will be 60 or older, with the total number in this age group rising from 1 billion in 2020 to 1.4 billion (World Health Organization, 2022).

Demographic diversity necessitates infrastructural and regulatory modifications to guarantee inclusion, but it may expedite creativity by providing a range of various viewpoints. These changes emphasize the necessity for flexible home designs that accommodate individuals of various age groups. Residences must adapt to shifts in family dynamics, the aging process, and life-style modifications. Architects and planners should give priority to socio-economic inclusion and make a conscious effort to involve older adults in their designs. The homebuilding sector must acknowledge that the current housing supply is insufficiently tailored to meet the unique requirements of various demographic groups.

Housing affordability

Economic pressures and rising housing costs are making it increasingly difficult for many people to afford stable and suitable living conditions. Social and economic factors such as insufficient income, unemployment, and high living expenses exacerbate this issue. In metropolitan areas like Tokyo, New York, Toronto, and more, the disparity between housing demand and supply is stark. For example, around 95 percent of housing in New York City is not affordable for individuals earning average incomes (Ceron, 2024). In Canada, Toronto has fewer than 2.2 million dwellings (Statistics Canada, 2016), and housing prices have surged by 34 percent over five years, reaching about $ 1.2 million CAD in 2022 (Toronto Regional Real Estate Statistics, 2022).

Market rental housing, including purpose-built rentals and secondary suites, typically receives little government support, limiting aid to social housing and rent supplements (McAfee, 2015). Mortgage payments are also burdensome; for example, in Vancouver, Canada, they accounted for 85.4 percent of family income in 2021 (Statista, 2021).

The high living and housing costs highlight the need for affordable accommodations that adapt to market changes and remain viable over time. Adaptable housing offers a solution by providing flexible and cost-effective living spaces that can adapt to a client's changing needs within a small footprint. By optimizing space usage and reducing the need for frequent relocations, adaptable housing can help alleviate the burden of expensive housing.

Environmental challenges

Unprecedented natural disasters have heightened environmental concerns and underscored the necessity for future housing designs that have minimal impacts on the natural environment. Human activities have significantly contributed to global warming, primarily through increased fossil fuel consumption and deforestation since the Industrial Revolution, leading to a greenhouse effect and disrupted natural balance (United Nations, 2015).

Climate change presents numerous risks, including increased flooding, severe droughts, and extreme weather events. The 2021 floods in Germany resulted in hundreds of deaths, massive property destruction, and significant economic losses (Lehmkuhl et al., 2022). In 2023, the severe flooding in Slovenia caused significant financial losses amounting to hundreds of millions of euros and loss of human lives. Droughts have intensified, with 73 percent of the global land area experiencing severe drought conditions in 2022 (White, 2023). This adversely impacts food production, water resources, and biodiversity. Wildfires have become more frequent and severe, with the United States experiencing 20 wildfire incidents costing over $1 billion US in damages between 1980 and 2021, with 80 percent occurring after 2000 (Smith, 2022).

Governments are implementing innovative policies to address environmental issues. For example, the Canada-wide Strategy on Zero Plastic Waste, adopted in 2018, aims to reduce plastic waste through a circular economy and lifecycle approach, phasing out single-use plastics by 2030 (Government of Canada, 2023). Additionally, the Canadian government promotes energy-efficient housing through initiatives like the Canada Greener Homes Grant, which provides financial incentives for home energy improvements (Canada Natural Resources, 2021).

Adaptable housing introduces homes that can help reduce environmental impacts in a myriad of ways. For example, homes that adapt energy usage digitally, repurpose materials in renovation, and homes that can be built to be disassembled, rebuilt, contracted, or expanded. Further, they open avenues for homes that occupy smaller footprints and adapt to the weather, minimizing reliance on mechanical cooling systems. A dynamic home that reduces fossil fuel and material consumption is a huge next step in ensuring that our environment can begin to recover.

Rise of remote work

The COVID-19 pandemic has accelerated the shift towards remote work, fundamentally altering how people use their living spaces. According to the Pew Research Centre, about three years following the onset of the COVID-19 pandemic, almost 35 percent of workers who have occupations that can be performed remotely are currently working from home on a full-time basis (Parker, 2023). This is higher than the pre-pandemic level of only 7 percent (Parker, 2023). This shift necessitates adaptable living environments that can seamlessly integrate work and home life. Flexible layouts, soundproofing, and dedicated workspaces are becoming essential features in modern housing design. Moreover, there is a growing trend towards multi-functional living spaces. These spaces are designed to serve multiple purposes, from living and dining to working and exercising. This trend highlights the need for adaptable housing solutions that can maximize the utility of limited space without sacrificing comfort or functionality.

Conclusion

The challenges of climate change, resource depletion, housing affordability, and socio-demographic transformations underscore the urgent need for adaptable living solutions. By examining the concept of adaptability in housing and exploring its relevance to modern social challenges, this chapter highlights the potential of flexible living spaces to meet evolving needs. Through international case studies, we see practical examples of how adaptable housing can enhance living conditions and offer sustainable solutions for the future. As society continues to change, the importance of adaptable housing will only grow, making it a critical component of urban planning and design.

1.1. Appartement Spectral, Paris, France

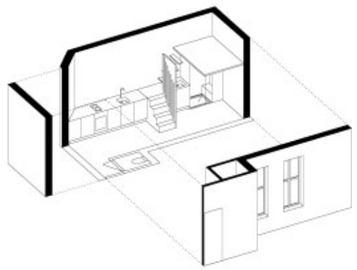
Design: Nicolas Dorval-Bory & Raphaël Bétillon

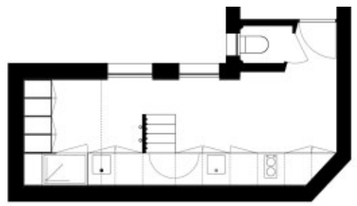
Appartement Spectral is a small studio located in Paris, France, measuring roughly 19 sq.m (205 sq.ft.). This renovation project was designed by Nicolas Dorval-Bory Architectes in collaboration with Raphaël Bétillon of Bétillon and Freyermuth Architectes. As it is very common with small apartments, the design team was focused on overcoming a lack of natural light. They worked on artificial lighting designs to not only reduce the darkness, but also provide a unique spatial experience. The team used the Colour Rendering Index (CRI) to test lighting effects on spatial perception and experience. The CRI measures how artificial lighting impacts accurate colour perception. There are two types of artificial lighting used throughout this unit: »high-CRI fluorescent tubes«, which are above 90 CRI, emitting neutral white light, and »low-pressure sodium (LPS) lamps«, at 0 CRI that emit orange light. Low CRI lights make users perceive the space as monochromatic. The design team also made the studio almost completely white to allow the lighting system to reach focus.

The studio is divided into two distinct lighting zones described as a »binary system« using the different characteristics of these two lights. High-CRI lights were used in rooms where accurate colour perception is necessary, like the kitchen and living rooms. Conversely, low-CRI lights are used in areas where colour differentiation is less critical, like the bedroom and bathroom. In addition, a partition wall separates the two lighting environments – this movable separation allows residents to switch between both lighting modes according to their needs. Further, as the apartment has a very compact living area, a loft bedroom was incorporated to economize space and suggest a sense of boundary between public and private spaces in an otherwise very open unit.

This project is an excellent example of adaptable living as it allows the users to manipulate their space to suit their changing needs on a whim. Lighting changes depending on the activity can happen quickly and effortlessly, supporting the user in a way that they wouldn't expect from a typical unit.

1. The apartment's open plan creates a natural space flow.
2. Axonometric view of the space.
3. Floor plan.
4. View of the lofted bedroom.
5. A lack of traditional partitions allows for interaction between the main floor and the loft.





1.2. Naked House, Kawagoe, Japan

Design: Shigeru Ban Architects

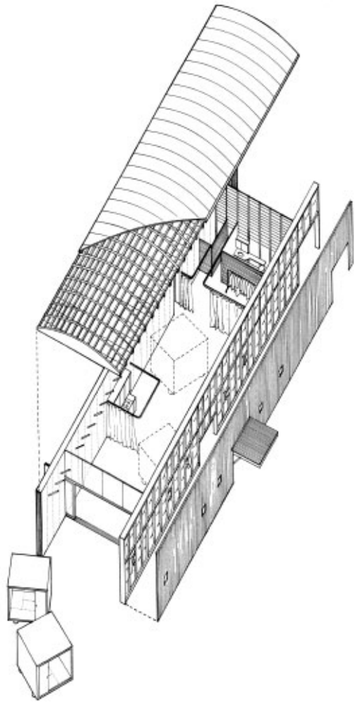
Shigeru Ban's Naked House is located in Kawagoe, Japan and measures 195 sq.m (2,100 sq.ft.). It was designed as a prototype for a family of five and caters to grandparents, parents, and small children. The owner challenged architect Shigeru Ban to design a place that is not only open with reduced privacy to avoid seclusion but will be highly flexible to adapt to the evolving family's needs.

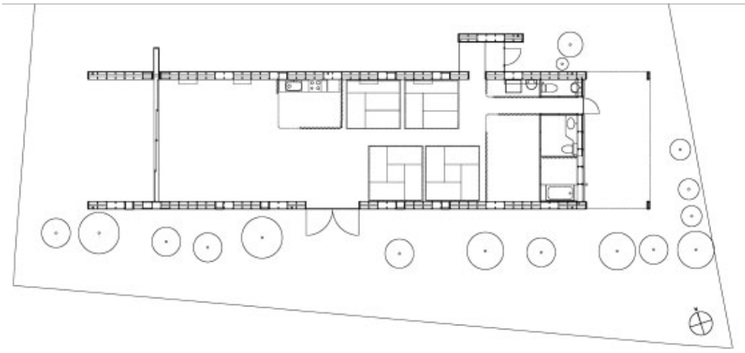
The home is a double-height bungalow-like structure that consists of one open room. The walls are made of translucent insulation fibre-reinforced plastic and Nylon membrane that allows diffused light to pass through, creating a soft glow throughout the house. Within it, four mobile boxes act as rooms and can be freely repositioned. The dining room can also be repositioned, as it is just a table and chairs. Conversely, the kitchen and bathroom are static and situated along the edges of the rectangular house. These portions being tucked away and unmoving gives the compartments a completely modifiable living area to work with.

The boxes are compact and include only essential items and fixtures to reduce weight; each box is complete with tatami floors and removable sliding doors, and they can be arranged in a variety of ways. For example, they can be lined up to create one big room or dispersed further or closer to heating and cooling elements to adapt to temperature preferences. As such, the home offers minimal privacy but allows each family member the autonomy to disengage or unite spaces depending on activity and preference.

The adaptable environment is centred around the idea of contrasts: static vs. dynamic spaces, and private vs. public. Spaces move and shift on a whim in this unique project, and privacy is not achieved through traditional enclosed rooms with immovable walls, but rather by establishing a visible barrier that separates the area. Per the client's request, these portable containers eliminate any real separation among family members and act as flexible media to foster community and support the family's activities. The open floor design also preserves a shared living environment, making it well-suited for an ever-changing multigenerational family.

1. Exterior view.
2. Axonometric view.
3. Children can play on top of the mobile boxes.
4. Floor plan.





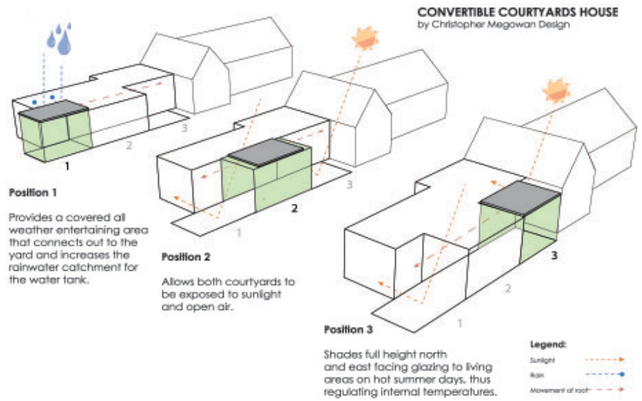
1.3. Convertible Courtyards House, Melbourne, Australia
Design: Megowan Architectural

Unfortunately, this 70 sq.m (215 sq.ft.) house is oriented north–south, causing poor daylighting all around the structure. To deal with this challenge, Megowan Architectural came up with an addition to the existing heritage-protected cottage that provided greater daylighting to the previously darker interior areas. This involved the introduction of courtyards on either side of the building and a dynamic covering that could allow usage of the new spaces through rain and excessive shine.

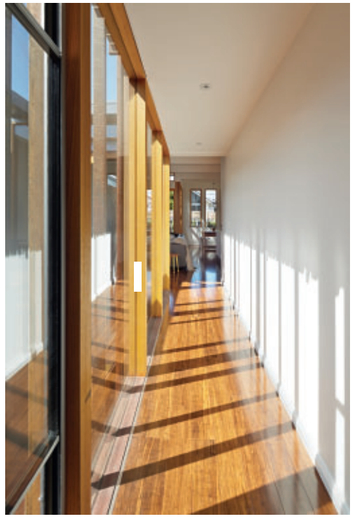
The original structure was an Edwardian weatherboard house. Megowan Architectural added a kitchen, living and dining area, bathroom, master suite, and two decks to the structure. The introduction of the courtyards, connected to the indoors by big, bifold glass panels, allows for natural light to enter deeper into the open plan house. Further, it provides the residents, who are avid gardeners, space to grow their own produce. The project is also far more environmentally friendly now with the addition of rainwater collection, photovoltaic solar panels, great insulation, locally sourced materials, and more.

A component that makes this house truly adaptable is what gives this project its name. Above the two courtyards is a timber, steel, and polycarbonate covering that can be moved with a hand winch to adapt to the climate. If the sun is flooding into the dining room and making it too hot, the covering slides keep the house cool. When it rains, the courtyard can still be used by sliding the cover out and over either side. On mild, sunny days, the covering can roll over the house, exposing both courtyards for maximum enjoyment. This extension has not only helped to bring light into a poorly lit space but also created a gathering space for residents to use with.

This project makes the most of the challenging climate and site, creating a beautiful space that can be used year round. It is an example of making a house a home, a lovely, desired fixture that adapts and enhances one's quality of life.



1. Diagram of possible roof configurations.
2. Floor plan.
3. The roof can be rolled back to expose the windows to the sun.
4. Tall floor-to-ceiling windows let plenty of light in
5. External view.
6. The living and dining rooms flow straight out to the courtyard, encouraging interaction with the outdoors.



1.4. Nest House, Herefordshire, England
Design: Studio Bark and U-Build

Nest House is an eco-home designed to help a client age in place as his mobility declines. Made using Studio Bark's U-Build system, the home was constructed from start to finish by students with no experience. A huge step for sustainable homes, Nest House, as built with the U-Build system, can be completely disassembled at the end of its lifetime, making it a »circular home«.

This single-story home was proposed by the clients who wanted to build an accessible home on their farmstead. The plan is a hollow square to allow for lots of daylight and natural ventilation. The house itself is clad in wood and highly efficient insulation, and the roof is covered in greenery and photovoltaic cells to facilitate fully electric living. These absorb heat and, as a result, allow for reduced reliance on mechanical cooling systems. As one of the clients uses a wheelchair on occasion, the halls were built to be wide, and the windows were top hung to facilitate easy opening while sitting down.

Overall, great care was dedicated to making this home highly sustainable. Aside from U-Build allowing this house to be expanded, contracted, and even disassembled, the house prioritized using reclaimed materials to act as supports and used no metal or concrete in the process. The result is an excellent demonstration of how the U-Build system can help to create sustainable homes quickly with unskilled labour and a wonderful, accessible home for the owners to age in place.

1. Exterior view.
2. Sections.
3. Floor plan.
4. Wide hallways allow for continued accessibility.
5. The surrounding deck is shaded in parts to encourage outdoor time in any weather.