

BUILDING WITH WOOD



RENEWING FOREST PRODUCTS ATRIUM

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BUILDING WITH WOOD

THE NEW TIMBER ARCHITECTURE

PRESTEL

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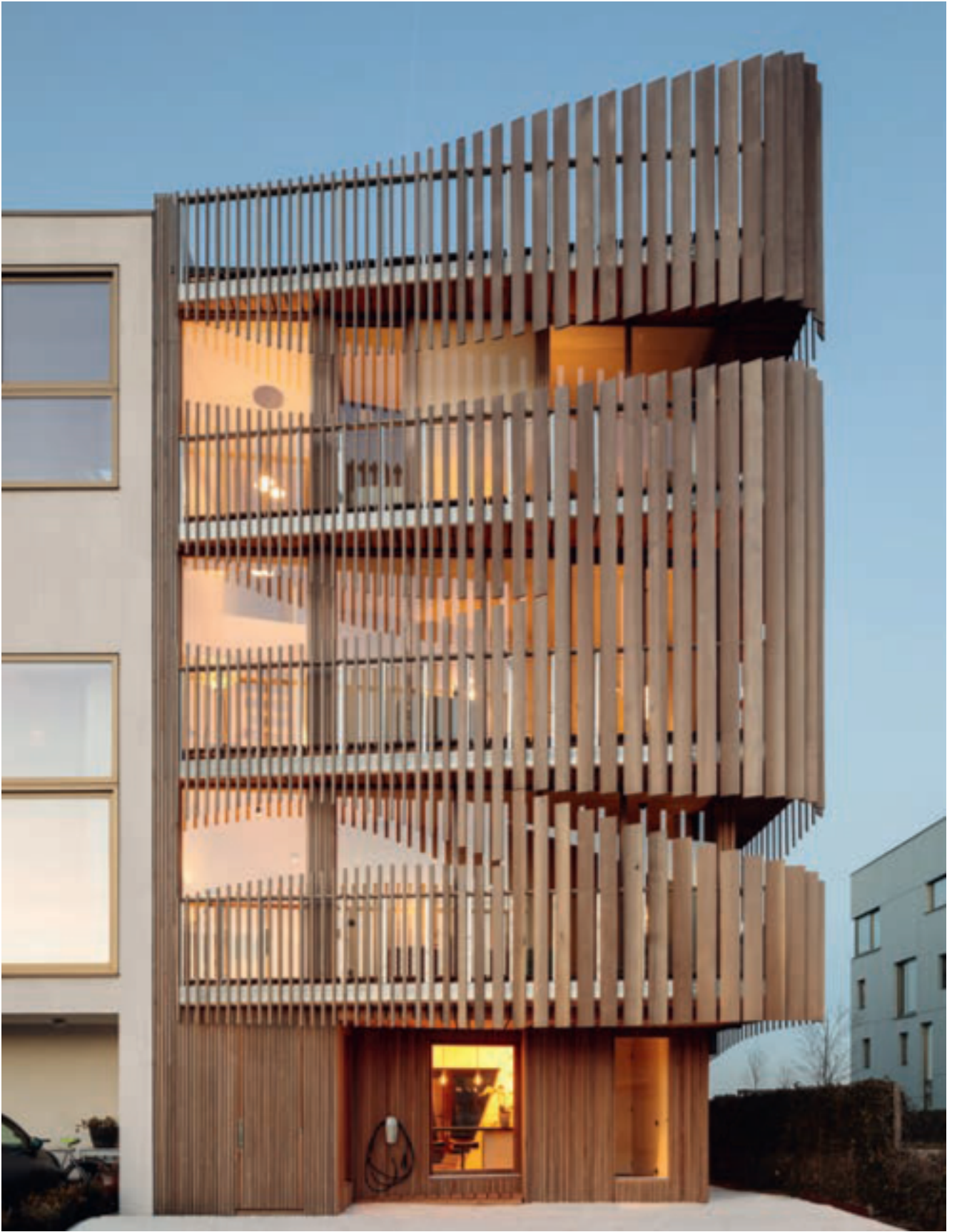
INTRODUCTION

Associated with centuries-old architecture and traditions rooted deeply in the cultures of the world's various regions, wood is now one of the most utilised materials today and offers us genuine hope for the future. Unjustly forgotten over the last two centuries, wood is back with an impact stronger than ever. Facing the numerous troubling challenges of today's world, architects around the world have re-invented wood with the use of digital technologies. They are taking part in a fascinating race to compete in cutting-edge solutions and to constantly break height and scale records. What was unthinkable in the past, like a wooden skyscraper, is becoming a norm. Computers have made this possible. Even if design processes are defined by the aid of digital technologies, the art of building in wood continues to strike a good balance between drawing from traditions and infusing old techniques with novel ways of fabricating wood structures. These new methods are driven by extensive studies of the structure of wood that have led to digital wood processing.

Environmentally, as a material, wood is absolutely unrivalled while providing excellent structural performance. Wood offers comparable strength to the widely used concrete or steel, yet with incomparably less expense in terms of production. Wood is easily available, often locally, which simplifies the construction stage just as much as the fact that wooden structures are much easier and faster to erect, and allow for no-waste building sites. Renewable and durable, wood's sustainable qualities are enhanced by its ability to extract carbon from the atmosphere rather than emitting it. Last but not least, its aesthetic values are difficult to beat. Ideal for serene and atmospheric spaces, wood, even in an urban setting, can bring us closer to nature. Whether used in a public, educational, or residential building, wood is a guarantee of a healthy environment. Regardless of the scale, it can perfectly insulate sound or heat, and can be used without being mixed with other, less friendly, materials. It also has a soothing visual impact.

I am truly honoured to begin this book with a conversation with the acclaimed Kengo Kuma, a pioneer and master of wood architecture, whose role in the material's revival is significant. The architect embraces traditional techniques and modern advancements to imagine a better future, but also operates with carefully crafted structural solutions to create special visual effects that influence the particular way we experience a space.

The following overview of contemporary wooden buildings presents the most ground-breaking and sophisticated concepts. Each project is a powerful demonstration of the structural power and aesthetic beauty of wood, which is illustrated in numerous striking images, while at the end of the book readers can find more technical details, including plans and sketches of the featured buildings. Wood is always at the heart of the examples selected for this volume; it is used not merely as an addition or decoration but also to create a solid and innovative structural base. Architects from around the world are using the well-known yet entirely re-invented material in a visionary and often unprecedented way. The panorama of various typologies proves that the possibilities of wood are now limitless. I would like to thank all architects presented in this book for their enthusiastic participation and for sharing their precious experiences that have steered the discipline into a very promising direction.





Museum of Hiroshige Ando

Batou, Nasu-gun, Tochigi Prefecture, Japan, 2000

Designed to celebrate the oeuvre of Hiroshige Ando, the building aims to translate into architecture the revolutionary perspective that the artist created in his woodblock prints. A superposition of layers was used to show the three-dimensional space, which Kengo Kuma recreates with wooden louvers made of local cedar. This meticulously arranged structure, which defines both the rectangular volume and gabled roof, creates an original shell that interacts with the natural light inside as well as naturally blending the outside into the surroundings.

IN CONVERSATION WITH KENGO KUMA

In many buildings designed by Japanese architect Kengo Kuma, wood plays a leading role. The natural character of the material is masterly used to create highly original shapes and a pleasant atmosphere. Each aspect of wood is carefully taken into account – both the structure and texture, as well as the ways these affect the play of light and air circulation. With a great sense of all the nuances that the use of wood brings to each project, Kuma draws from old techniques and brings contemporary architecture back closer to nature. The architect has compared it with music, while his designs are aimed at reflecting rhythm and tones to arrive at pure harmony with the landscape. Inspired by the most traditional approaches, Kuma treats wood as a remedy to many contemporary challenges. He often emphasises that the role of architects should not be limited to inventing forms but that they also should suggest a new way of living, where past solutions enhanced by the latest technologies could be built better in the future.

You have often mentioned that the house you grew up in (made of wood) was a kind space. One of your inspirations is the inviting form of a bird's nest. Is wooden architecture a guarantee for obtaining welcoming and warm spaces?

Yes, indeed. The house I grew up in was wooden, but what made it even more welcoming and comforting I think was that it also had tatami and washi, which were essential materials for old Japanese houses. All those elements contributed to my idea of a gentle space for people.

As opposed to the modernist tradition, with Le Corbusier playing a leading role, you insist that a building cannot be an isolated object, cut off from the land around it. Is using natural and local materials the best way to harmoniously connect architecture with its context and cherish the surroundings, especially the natural environment? And why is it so important to consider the context in the process of designing new buildings?

Why don't we look back to the life of our ancestors? Human beings had been walking directly on the earth for a long time. This is because doing so felt more stable and secure as a living creature – the sense of being tied to the ground means much more than one might think. Therefore, it is only natural for me to design architecture that is both technically and psychologically connected to its location.

In your vision, light and shadow play an important role to often create a forest-like experience. Could you talk more about using wood in this context?

A forest-like experience is not at all special, considering that human beings have long been inhabitants of forests. We somehow feel relaxed and comfortable in wooden architecture because of this. The texture of wood works as a filter and can reflect light and shadow and create a forest-like air in a building, which is one of many reasons we tend to use lots of wooden materials in our designs.



What are the most inspiring lessons you have learnt from traditional Japanese architecture?

There are certain techniques and methods that I've learnt from Japanese traditional architecture, but the number one lesson for me was a sense of unity with the garden – or that architecture should be a part of the garden (or the landscape).

How do you approach the challenging task of combining new technologies with the use of natural materials?

Applying new technologies does not conflict with using natural materials. Advanced technologies can only enhance or draw out the potentials of natural materials. Our studio is constantly searching for new ways to use them and is trying to be wired into any new technologies.

In one of your interviews you said, referring to Kenzo Tange's work, that you want to create architecture that is currently in demand – what do you think is in demand now?

The demand of the age I feel now is "returning to nature," to which I try to be responsive through our projects.

In the book I focus on buildings that are structurally made of wood. How far can architects push the limits of wooden architecture thanks to advanced technologies at the moment?

I don't think one specific wooden building with cutting-edge techniques can change the future of architecture. It's not about designing technically elaborated buildings of wood – architects should care about changing the "texture" of big cities – from covering them with hard and cold industrial materials to weaving them with more natural, human-friendly materials.

What do you dream of when thinking about wooden architecture? Do you have any particular goal or wish for the future?

My dream is to create a workspace where I myself can feel the utmost comfort. I'm already nearing this – our studio now has several "satellite" offices scattered around Japan, from Okinawa in the south to Hokkaido in the north, all humbly situated in nature.

GC Prothro Museum Research Center

Torii Matsu Machi, Kasugai-shi, Aichi Prefecture, Japan, 2010

The lightweight, semi-transparent structure of one of the most iconic buildings designed by Kengo Kuma was informed by Cidori, a traditional Japanese toy made of a system of wooden sticks with joints allowing free combinations with a simple twist. This technique, devoid of any fittings, is boldly transferred into architecture to create a unique spatial atmosphere with a play of light and shadow reminiscent of walking across a forest. Proving the structural flexibility of wood on a large scale, Kuma's design also looks back to the times when architecture was purely a hand-made discipline.

Yusuhara Wooden Bridge Museum

Minami Aoyama, Minato-ku, Tokyo, Japan, 2010

The Yusuhara Wooden Bridge Museum is a peculiar kind of structure that is a passage between two public buildings on two sides of a road but also offers space for an artists' workshop and accommodation for artist-in-residence programmes. At the heart of the design of the gallery, suspended in the air, is a special technique from traditional Japanese and Chinese architecture. A grid of wooden cantilevered beams uses small structural elements to create a solid volume that is also sustainable.





Sunny Hills

Minami Aoyama, Tokyo, Japan, 2013

Kuma's idea when designing Sunny Hills was to invent a subtle volume that would resonate well with the residential context of the Aoyama district. The inspiration was once again a traditional Japanese method, based on a joint system called Jigoku-Gumi, where intertwined wooden laths of the same width create a complex grid without the need to use glue or nails. The way they intersect creates a cloud-like structure that is distinctive yet soft. As a result, the shop takes on the intriguing shape of a bamboo basket and invites customers into its equally atmospheric interior. The nuanced structure is impressive during the day but is even more striking after sunset when the building is lit from inside.



RESIDENTIAL ARCHITECTURE



14 LOGEMENTS HOUSING COMPLEX

PARIS, FRANCE, 2020 // MARS ARCHITECTES





This wooden gem hidden at the heart of a block apartment in the capital of France, designed by MARS Architectes, has created an exceptional ambiance that brings architecture closer to nature and achieves a sense of privacy in the middle of a big city.

What is initially the most striking in the development, commissioned by the real estate company GECINA in the 12th district of Paris, is its atmosphere of intimacy and its very natural style, both of which starkly contrast with the character and pace of the metropolis. “Walking in Paris, we sometimes catch a glimpse of its hidden side, when a partially opened porch unveils an unexpected richness, a calm and peaceful atmosphere, precious and vegetal, which gives a particular relish to Parisian heart of blocks,” muse the architects, who have so successfully transformed one of these types of spots. Surrounded by an apartment complex from the 1970s, the wooden building, evoking Japanese temples, is enveloped by a subtly arranged garden.



“One of the major challenges of the project lies in the entry sequence, creating a smooth transition between the urban universe of the city and the intimate universe of the home,” state the architects, whose final choice was a canopy blending into the rhythm of the façade.

Due to this specific location, the architects were challenged with various constraints on the construction. Not only did the eleven-storey block separating the site from street, and not allowing any lifting installation, have to remain fully operational, but there were also strict weight constraints, as the new construction had to span an existing parking lot. Combining traditional techniques and contemporary aesthetics, this project required both innovative methodology and cutting-edge engineering, as well as quality craftsmanship. The wooden construction and façade proved to be the most practical solution, while the rigorous arrangement of the structure was determined by the scale of the windows. The wood selected for this housing complex had to be durable and weather-proof, and was additionally reinforced by the white protective paint used at the ends of the wooden beams, which also enhances the rhythm of the façade.

The regularly scheduled balconies also function as a protection for the woodwork as well as the shutters. The space obtained through these balconies, and the recessed wall of windows and shutters, smooths the transition between the inside and outside. MARS Architectes aimed at an architectural style that would be simple yet original and in harmony with the garden, which is why they decided to leave the structure exposed and the assemblies visible. Interestingly, the shutters are made of a system of sliding panels that further adds variety to the façade, yet in a strict manner, by leaving the windows completely hidden or entirely prominent.



Although the project was not without challenges, they successfully implemented sustainable solutions into a collective housing design amid the dense, old urban fabric.