



Masayoshi Takeuchi

## Insulation workshop

Minami-Boso, Chiba, Japan

organizer

NPO Minami-Boso  
Republic

lecturers

Nao KONO  
Tsumiki Design

Akira UCHIYAMA

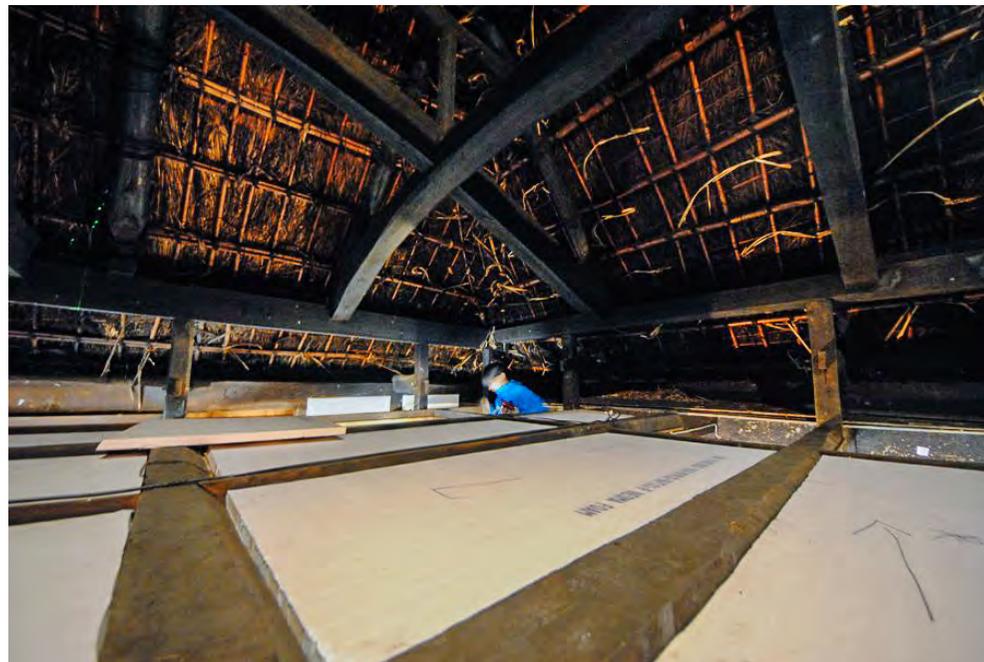
NPO Minami-Boso Republic

Masayoshi TAKEUCHI

Mikangumi

If an old Japanese farmhouse should ever fall into your hands, such as this 130-year-old kominka in Minami-Boso, you'll eventually discover that the ceiling hides the incredible wooden structure of the roof beams. If you happen to acquire the house in the summer, you'll be possessed with the urge to remove the ceiling, to expose the beautiful wood and thatchwork above. Tsumiki understands this urge, but cautions you that if you follow it, you will be in for some misery once winter comes.

Tsumiki facilitated a renovation workshop to add a thermal "lid" to this ceilingless kominka, preventing heat from escaping into the rafters and out through the thatch roof. Tsumiki has developed a clever DIY system of adding ceiling insulation to old buildings where the woodwork is rarely plumb, level or square. Workshop participants cut slabs of rigid foam insulation into custom panels that fit snugly into the ceiling grid. The panels are then painted white, and the resulting texture is similar to fine stucco or drywall. In the summer, the panels can be removed and stored to expose the rafters again and create a cooler environment.

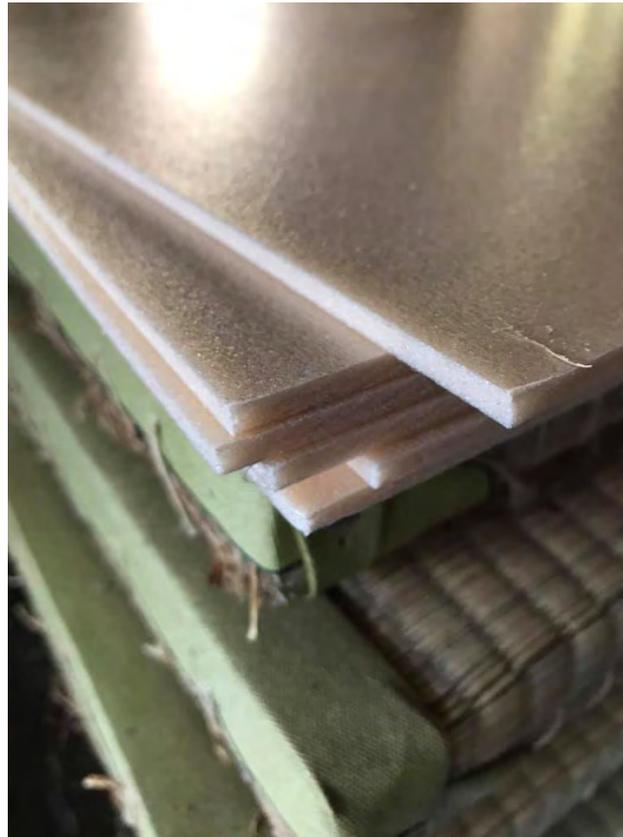




The beauty of the Japanese sliding door lies in its delicate construction. Unfortunately, they do little to contain the heat of a house in the winter, and their slender design offers few opportunities to increase thermal resistance. Another Tsumiki innovation targets the weakest thermal aspect of the door - the translucent paper paneling. Workshop participants inserted a layer of polycarbonate in between two paper sheets, dramatically improving the door as a thermal barrier while retaining the original aesthetics.



Tsumiki also created a set of moveable floor panels that can be employed during the colder months - a slab of thick foam insulation fitted with a wooden top, making the floor a much more inviting place to sit, dine and sleep when the cold comes calling.



With door and ceilings modified, the next frontier was the floor. Traditional Japanese houses often have a suspended floor that, during the summer, allows cool air to flow up into the house through the gaps in the floorboards. In the winter, this air flow is unwelcome. Tsumiki takes advantage of the fact that there is usually a 5mm difference between the top surface of the tatami mats, and the wooden trim boundary of the floor. This allows them to sneak in a Tyvek sheet and 4mm of styrofoam insulation underneath the tatami mats. The miraculous difference this makes was celebrated in the following haiku, written by a workshop participant.

スタイロを  
たった4mm  
別世界

*“Styro.  
Only 4mm;  
different world”.*

*From the book “Insulation Haiku Collection”  
by Hiroshi Maruhashi*



## Nao Kono

Co-founder

Nao received his undergraduate and graduate degrees in architecture from Kyoto University, taking time off from his studies to work in Switzerland and apprentice with traditional carpenters in Kyoto. He co-founded Tsumiki Design & Construction with Momoko Kono when he was 27.

Nao believes that the process of improving, renewing, and renovating the built environment can also bring people closer to each other, forging new relationships within and across communities.

In addition to providing participatory design and construction services to Tsumiki clients, Nao teaches hands-on architecture workshops throughout Japan, focusing on DIY renovation, thermal analysis of traditional Japanese houses, and grassroots creative placemaking.



## Momoko Kono

Co-founder

Momoko holds an undergraduate and master's degree in architecture from Kyoto University. Her undergraduate thesis received first prize in the Diploma Japan Championship, a nationwide architecture thesis competition juried by architect Yamamoto Riken. Momoko's work won 1st prize in the 2009 SD Review, a Japanese architecture competition juried by Toyo Ito.

At Tsumiki, Momoko facilitates a design process that includes a legitimate creative partnership with the client, through collaborative sketching and model-making exercises.



## Natsume Naoko

Art Director

Natsume holds both an undergraduate and a master's degree in architecture from Kyoto University, where she graduated alongside her classmates Nao and Momoko. As an undergraduate, she won the diploma prize for her thesis "Kami No Mukougawa" (Possibilities of Paper), the highest honor given for outstanding thesis work.

In 2012, she founded Natsume Sewing Atelier, through which she designs and produces her own line of clothing, curtains, textiles, carpet patterns, and home furnishings.

Natsume's playful illustration style helps Tsumiki interpret specialized architectural knowledge, making it available to the non-architect.



## Koji Oshida

Partner & Head Carpenter  
Director, Nagomi Architecture

Koji was born in Kawagoe in 1974, and began apprenticing as a carpenter with his father when he was 18 years old. He took a break from his apprenticeship at 21 to take a job providing care for people with disabilities. After a transformative bicycle tour from Hokkaido to Kyushu, Koji decided to return to his calling as an artisan, and resumed his training. He has been working as a carpenter for over 25 years.



## Takuto Tanaka

Designer & Carpenter

Born in Niigata, Takuto studied architectural design at the Kanazawa Institute of Technology. During his time as a student, he joined an organization called Kashimo Mokushojuku. For 25 years, this club, has been working with residents of Kashimo (famous for its ancient forestry practices) to design wooden architecture for their city. This artisanal carpentry training program culminates in a 2-week building workshop during the summer. After participating in this program for three years, Takuto was voted by his fellow students to serve as the head carpenter for his fourth year. At Tsumiki, he provides a range of services, from fine carpentry to digital design.



## Minami Kanai

Designer

Minami holds a degree in Industrial, Interior and Craft Design from Musashino Art University, Tokyo. At Tsumiki, she lends her skills to construction drawings, graphic design, typography, web design, and logo design. She has helped Tsumiki to include web design services as part of their renovation package for small businesses. Minami also performs carpentry, painting and renovation work. When she's not at Tsumiki, you can find her singing and playing guitar at various clubs around Tokyo.



## About the author

Bryan Ortega-Welch is a lifelong educator dedicated to creating places of honor curiosity and serve as engines of social change. His work explores the transformative potential of spaces that exist in between formal and informal learning, institution and community, work and play. Bryan has co-founded K-12 summer programs, schools and learning centers in the U.S. and internationally.

Bryan holds a Bachelor of Arts in Education from the University of California, Berkeley, and is currently a Master of Architecture candidate at the Harvard Graduate School of Design.



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