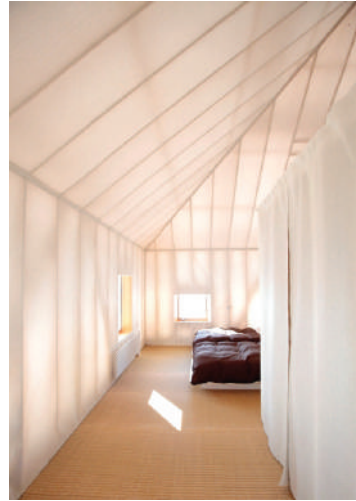


## Material reference 1

Kengo Kuma's glowing lightweight house was built as part of an array of experimental, environmentally-conscious structures in Japan. Modeled on the traditional "chise" (a simple orthogonal form with a pitched roof and made of grass and earth), Kuma's Meme Meadows house takes advantage of more modern methods and materials.



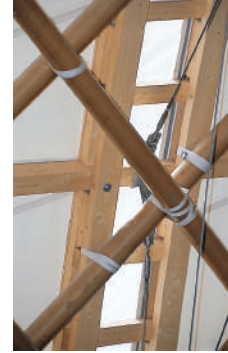
The concrete slab retains heat from underfloor systems and by way of the central hearth. The walls and roof are composed of three layers of materials: polyester fabric, an insulating layer made from recycled PET bottles and a removable inner curtain made from glass fiber. The transparent structure was designed for "a life surrounded by natural light."



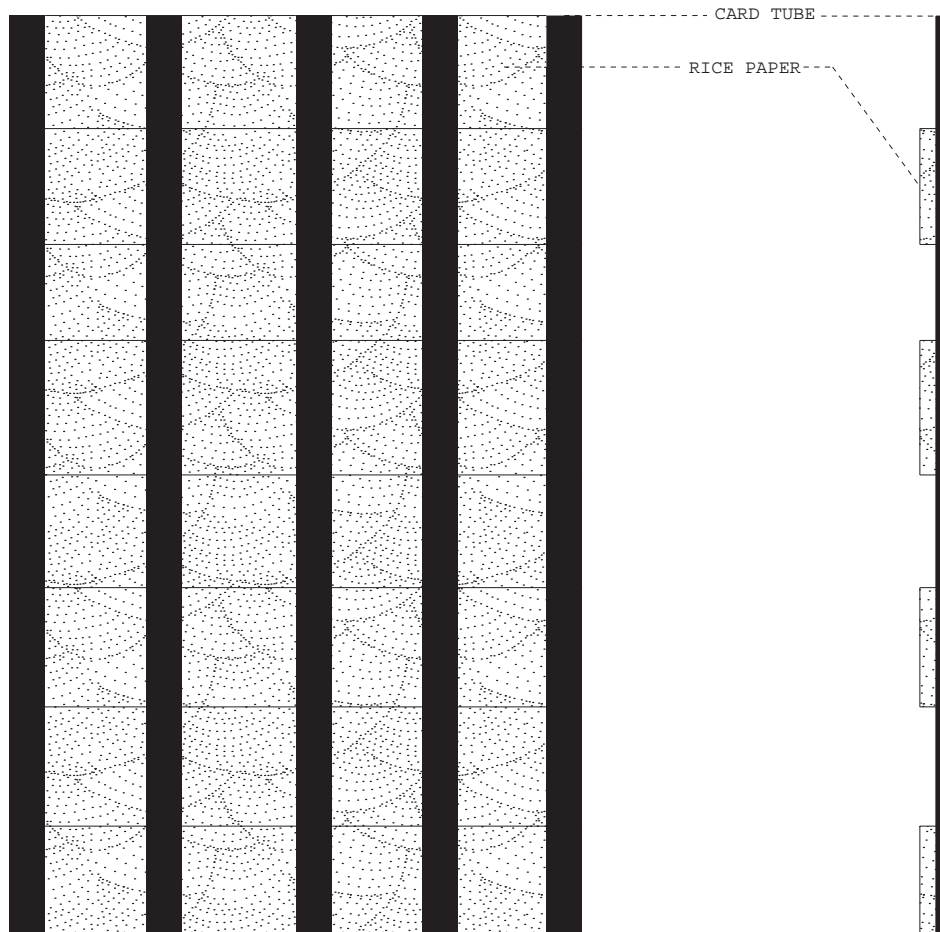
## Material reference 1

As an expression of sustainable architecture - a central theme of hanover 2000 Expo - Shigeru Ban pavilion was constructed with recycled materials that can be dismantled and used again. Over the main hall is a lattice-grid shell of cardboard tubes. The end walls are in a cable-tensioned cardboard honeycomb construction, while the roof skin consists of a five-layer fire- and waterproof paper membrane.

Even the sand-filled steel foundations can be removed and used again later. Extensive trials were necessary to obtain planning approval, however. The structure had to be reinforced with curved timber ladder girders, which, together with the steel stays, form the real load-bearing elements; and the paper membrane had to be covered with an additional PVC fabric.



One to one first proposal:

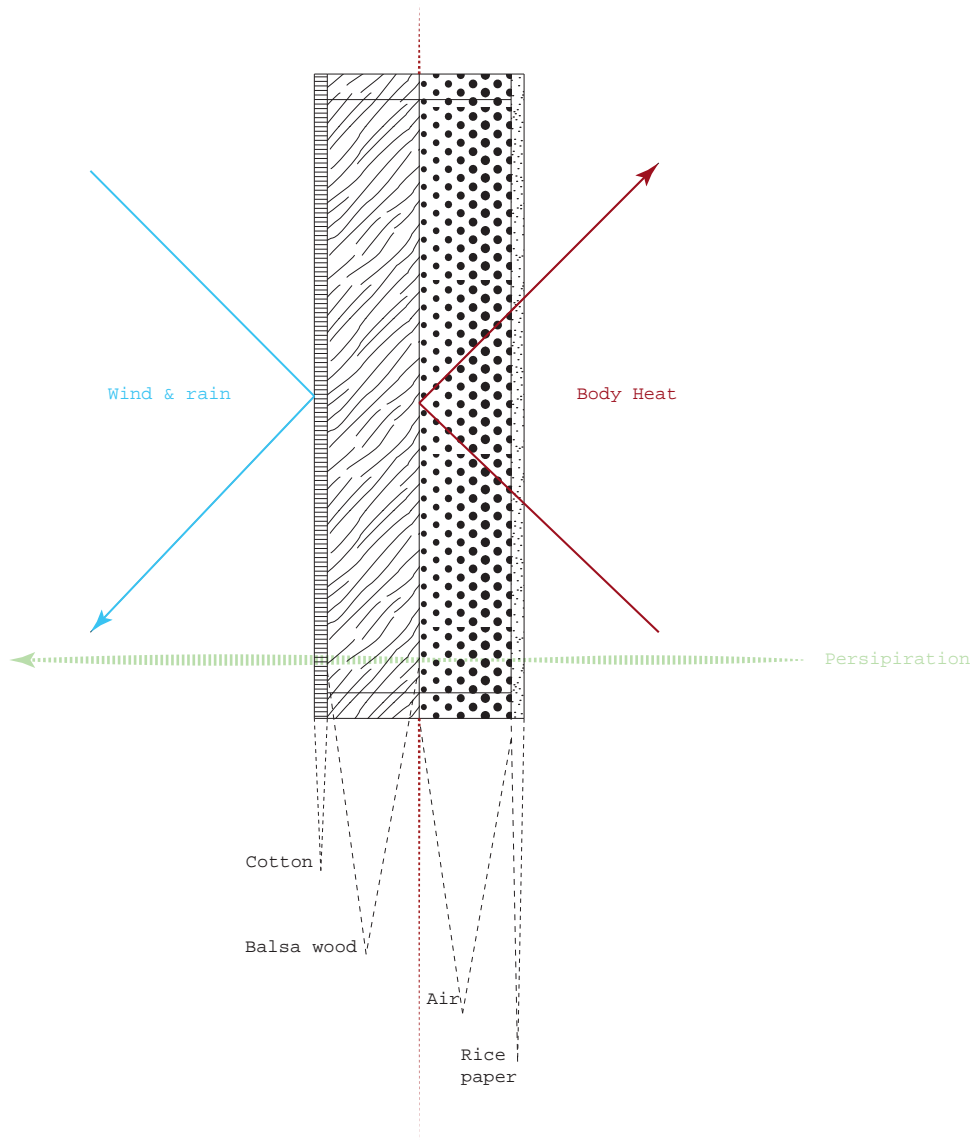


My proposal would consist of a facade made off card tubes and rice paper.

As seen in Kengo Kuma and shigeru ban case study, the light would flow in the space thanks to the translucent rice paper.

Issues encountered:

- . Poor insulation,
- . Poor strenght of rice paper for an outdoor material



One to one final proposal:

For environmental issues (wind & rain), rice paper cannot actually be a material for the outer part of the facade. For this reason, we would base our facade on the layered structure of a cotton tent.

On the outside stands a woven cotton fabric when in the interior, we would still have rice paper.

*Cotton:*

Pros

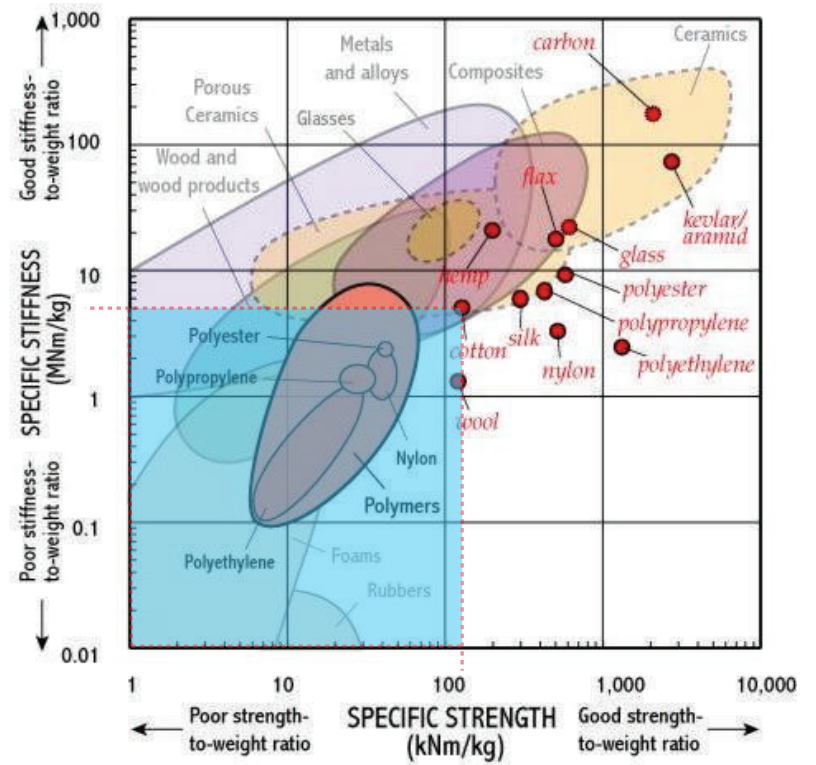
- .Breathable and moisture absorbent properties eliminate condensation
- .Maintains a stable temperature inside
- .Good sound insulation when windy
- .UV resistant
- .Long lifespan (over 20 years)

Cons

- .Maintenance
- .Low strenght compare to man made materials

*Insulation system:*

As seen in Kengo Kuma case study, an air gap can be left between the inner and outer material to improve the insulation properties of cotons and paper.



*Strength & Stiffness:*

Cotton is an average material in term of both strength and stiffness. Kevlar appears as both strongest and stiffest fabric we could use.

