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My thoughts on the New European Bauhaus

The Bauhaus movement can be thought of as a "paradigm shift" in art and architecture from the 19th into the 20th century. The direction I am aiming for can also be described as a "paradigm shift" for architecture and architects. I will explain this point through my interest in building materials and the architect's attitude towards social responsibility.

Immediately after graduating from university in 1985, I started my architectural practice and soon after, I started developing recycled paper tubes as a construction material. The world was at the end of the era of mass consumption, and terms such as "ecology" or "sustainability" that are such common place now, are words that had never been used at the time. I never began developing recycled paper architecture with those concepts in mind, I simply hate "wasting" things. I carefully kept the used up cores of fax paper rolls (which are usually discarded), and I tried to look for a way to use them. To me, paper tubes look like beautiful wood. And I was confident that even a paper tube that is logically weaker than timber could become a safe structure for buildings, if its safety could be confirmed through structural testing. Furthermore, since paper is an industrial product, it can be waterproofed and made to be non-combustible.

During the 1990s, a paradigm shift occurred, where "environmental issues" became recognized worldwide as one of the most important concerns for our future. In 2000, the theme of the World Expo held in Hannover, Germany, was also about "environmental issues". Since I was the only architect in Japan developing architecture made of recycled materials, I was entrusted with the design of the Japan Pavilion. With the help of the late German architect Mr. Frei Otto, for whom I have the utmost respect, I was able to realize a 3000m² grid shell structure using recycled paper tubes. After the six-month exposition, the building was dismantled and all the paper tubes were recycled as originally planned. This was my debut in Europe of recyclable architecture using paper structure. This was the moment that architecture made of recycled paper, which had never been of interest to the world before, came into the spotlight. I never started this kind of architectural design on the coattails of the ecology boom, I simply do it to "not create waste" and that I think it is "beautiful".

I often use wood and bamboo in my architecture. I used to admire the work of carpenters when I was a child. A carpenter would cut and sculpt this material that smelled very good, using simple tools to build up the house. It was like magic. Naturally as an architect, I have designed buildings in steel and concrete. This is to take advantage of the inherent characteristics of each building material. However, whenever it is possible to use timber in architecture, I always think to utilize timber in the structure as much as possible. Paper is also made from wood, but why am I so interested in paper structure and timber architecture. Although weaker than steel or concrete, the reason why I am so interested in timber architecture and paper structures, is because they have limitations in their use, being composed of natural materials. Steel is high strength and flexible, it is possible to make almost any form. On the other hand, with paper and wood, it is necessary to take advantage of their limitations and weak properties. This requires much knowledge and intuition, but as a result, a new form unique to paper and wood is created. The real pleasure of timber design or the warming comfort of wooden space is inherent in timber architecture. At the same time, it is important to recognize the appeal that timber structures are buildings that address real environmental concerns, not just sustainability as a trend. According to findings of researchers, when comparing the average carbon dioxide emissions of a structure built in steel and in concrete throughout the entire process from production (mining for steel or cutting trees) to transportation, processing, and assembly, it was discovered that timber structures produce about one-third of the carbon dioxide emissions compared to that of steel structures, and about one half of that of concrete structures. Furthermore, trees continue to capture carbon dioxide from the air until they are cut down. Above all of this, compared to consuming the limited natural resources of steel and concrete, wood is the only renewable structural material.

Bamboo is also an attractive material and has traditionally been used in architecture in Asia and South America. However, bamboo is a difficult material to use in modern architecture. It is still used as a structural material in countries where the construction regulations are not strict, but natural bamboo has different thicknesses and widths which make it difficult to perform structural calculations and to comply with regulations. Furthermore, bamboo is weak against direct sunlight and splits easily. I am developing to standardize the quality and size of bamboo by processing it as laminated member so that it can be safe and can easily comply with building regulations. I am currently working on a number of projects using bamboo in China. In China, there is almost no distribution of domestic timber, and having to rely on expensive imported timber, there are very few timber buildings built in recent times. Therefore, with the aim of spreading the use of laminated bamboo structures, in all of those Chinese

projects, they are carried out in collaboration with Chinese bamboo researchers and bamboo flooring manufacturers. It is an important idea in my projects, to use locally produced materials as much as possible and to minimize the transporting of materials. The use of paper, wood, and bamboo in architecture is appropriate for realizing sustainability, but it is neither strategic nor the end goal. For me, knowing that by taking advantage of the characteristics of the material, it is possible to create beautiful and heart-warming spaces, is what I think is truly important.

Next, I would like to describe my thought on the responsibilities of an architect. Historically and even now, architects have always been working for the privileged. All of the financial and political power that people of privilege possess cannot be seen, and so they hire architects to create monumental structures to express their power to the world. We architects help in this act. Of course, it is not necessarily a bad thing that architecture is built in cities where the citizens can be proud of, but architects should also work for the general public, and even for those who have lost their homes due to natural disasters. People do not die because of an earthquake. People die because the buildings collapse. In other words, architects are responsible for the man-made disasters that follow the earthquakes. Afterwards, architects look forward to the new projects as the city recovers, but before this recovery, the displaced victims are placed in poor evacuation facilities or sub-standard temporary housings. I thought that it was also the role of architects to improve such shelters and temporary housing into more comfortable and appealing facilities, so I jumped right into the disaster-stricken areas. In 1994, a genocide broke out in Rwanda, in East Africa, leaving 2 million refugees. I saw a photograph of refugees in a poor tent made by the United Nations (UNHCR) trembling in the cold during the rainy season. With such tents, medical support would have been meaningless. I wrote a letter to the UNHCR, wondering if a better shelter couldn't be supplied, but I did not receive a response. Therefore, I went to the UNHCR headquarters in Geneva without any appointments, and fortunately, I was able to meet with the director in charge of refugee camps and proposed a shelter made from paper tubes that can quickly and easily be assembled. Shelters were being made from wood that was supplied from cutting down local trees, and this was causing a separate environmental concern of deforestation. Coincidentally, UNHCR was looking for an alternative material to wood, so my idea of recycled paper tube shelters was accepted and I became a consultant to the UNHCR in Rwanda. The following year in 1995, a devastating earthquake occurred in Kobe, Japan. Of the many victims, I heard of Vietnamese refugees that could not move into temporary housing and were left living in tents at a park. I worked with student volunteers to build comfortable temporary houses made from paper tubes on top of a foundation of beer crates, as well as a paper structure church that

served as a community center. Almost every year since then, following the aftermath of natural disasters happening all around the world, I have gone to disaster-stricken areas and together with local students have built shelters, temporary houses, schools, and churches, using bamboo and paper tubes that are locally available anywhere in the world. I now realize that my motivation, energy, and satisfaction are the same, whether for normal commissions or for volunteering to build a temporary building in the disaster area. Moreover, the temporary paper structures are loved by people and are used as permanent buildings. On the other hand, commercial buildings made from concrete exclusively for making profit can be just as temporary as they are soon again rebuilt by another developer with the same intentions.

After winning the Centre Pompidou-Metz competition in 2004, I set up an office in Paris and have been traveling between Paris and Tokyo every other week since then. Paris is the perfect city to work in all parts of Europe. Another attraction to working in Europe is the benefit of an environment where there is a lot to learn. Working all over the world, I found that Europe has the world's best engineers, manufacturers, and found it is the best place to fully utilize the resources and products in the creation of architecture. Furthermore, we can think of a wide range of architectural solutions thanks to the diverse cultures, history, heritages, and climate. However, what is worrisome in recent years is that the standards for environmental performance of buildings have become so high, that there is no choice but to make products with excessive performance levels, resulting in excessive use of materials and cost, and is causing architectural costs to increase. I wonder if it isn't possible to make architecture that is more flexible in adapting to the environment, not one that far exceeds the bounds of realistic functionality and excessive standards. For example, in the same way that we humans dress lightly in the summer, and wear extras layers in the winter, can a building change clothes to adapt to the climate? The preoccupation with natural energy has led to building solar panels and wind turbines at the expense of the destruction of the beautiful natural landscape. Isn't more of a need for more developments or a way of thinking that balances the total scenery, including the environment and beauty. I look forward to explore such ways with the New European Bauhaus.

Shigeru Ban



Paper Tube Structure: Alvar Aalto Exhibition
Tokyo, Japan (1986)



Paper Tube Structure: Paper House
Yamanashi, Japan (1995)



Paper Tube Structure: Japan Pavilion Expo 2000
Hannover



Japan Pavilion Expo 2000 Hannover – interior



Timber Structure: Haesley Nine Bridges Golf Clubhouse
Yeosu, Korea (2010)



Haesley Nine Bridges Golf Clubhouse – interior



Timber Structure: Swatch Omega
Biel/Bienne, Switzerland (2019)



Swatch Omega – construction



Bamboo Structure: Bamboo Furniture House
Great Wall at Shui Guan, China (2002)



Bamboo Furniture House – interior



Bamboo Structure: Bamboo Pavilion at Tongji University
Shanghai, China (2018)



Shigeru Ban as UNHCR Consultant
for Byumba Refugee Camp, Rwanda (1999)



Paper Log House Kobe
for Hanshin Awaji Earthquake, Hyogo, Japan (1995)



Paper Partition System
for Kyushu Flood Disaster, Kumamoto, Japan (2020)



Cardboard Cathedral
for 2011 Christchurch Earthquake (2013)



Cardboard Cathedral – interior