Asian Forum

Technology Innovation and Its Practical Application

Shimizu Corporation
Executive Officer
General manager,Design Division
Hiroshi OKAMOTO

In the world today, major changes are occurring that go beyond the framework of past paradigms. China's admission into the WTO last November is expected to further accelerate the internationalization of Asia. We have entered an era of rapidly developing internationalization in all areas of activity, going beyond national structures. In this era, one must adopt a perspective and attitude that encompasses the entire world, avoiding the past tendency to focus on one's own country.

Turning to the world of architecture, since a building stands in a particular place and country, it has naturally been a basic assumption that architecture should be suited to the climate, lifestyle, and customs of the region where it is located. That is why each country has different laws, regulations, and standards for buildings. However, in addition to the burgeoning of architectural expression in the world during the twentieth century based on modern rationalism, there have been unending waves of globalization in many fields, including environmental problems, computerization, distribution, and production, and national differences in building standards have begun to stand in the way of the globalization of architecture. This is particularly conspicuous in the area of measures for human safety with regard to fire and earthquakes, and in the area of production as manufacturing becomes increasingly global.

On the one hand, these differences can give rise to technological innovations; but on the other hand, inconsistencies arise between regulations and reality in the planning and construction of buildings that cannot be completely covered by laws and standards which are based on past applications and sizes, including super high-rise buildings, atriums, arenas, exhibition halls, and other large spaces, automobile factories, manufacturing plants for semiconductors, liquid crystals, pharmaceuticals, etc., and research centers. This leads to an unnecessarily large expenditure of labor to achieve conformity to laws and regulations, and the resulting human and economic cost must not be overlooked. In order to allow people who travel throughout Asia to have peace of mind in any country and at any time, and in order to enable high-quality, efficient manufacturing for a global market by all countries in concert, it will be necessary to change over from local standards, which apply in only one country, to global standards, which are applicable in general over a wider region.

I would like to propose the establishment of global standards that should be shared by all countries for human safety and the manufacturing of goods, while respecting local standards that support the local community and its context. To illustrate why this is necessary, based on our experience, I would like to introduce the different laws and approaches of various countries in the area of fire safety for buildings, including the aspects of evacuation, smoke control, measures to prevent fires from spreading, fire resistance, structural safety, equipment safety, and electrical safety. Looking at five Asian nations (China, Singapore, Indonesia, Thailand, and Japan), U.K. and the U.S. in terms of these seven aspects, first of all with regard to smoke control, these countries can be divided into those that require smoke dispersion and those that do not. They have nearly identical approaches to the aspects of evacuation, measures to prevent fires from spreading, fire resistance, and structural safety, although the standards of each country are defined with different numbers. Similarly, the approach with regard to equipment and electrical safety is shared, but the laws and regulations vary in each country.

Meanwhile, every country has continued to perform a great deal of planning, simulations, and demonstrations on fire safety for the construction of safe buildings. I handled the direct design of the “Seavans”, in which fire safety was realized through the planning and demonstration of safe evacuation and smoke control in the high-rise portion and the atrium. “Seavans” was completed eleven years ago and incorporated the approaches used in the regulatory systems of each country with regard to fire safety at that time. The ideas behind “Seavans” are reflected in a variety of buildings that have been constructed since that time.

In my opinion, all of this demonstrates that the facts of engineering can be applied anywhere in the world, as a general principle. Global standards for manufacturing are provided by ISO 9000, but at present, there are still no common global standards to support architecture. With regard to safety and other basic matters, the necessary environment is shaping up for the sharing of performance design, fire safety systems, and verification technology, based on the experience gathered by each country in the past. I believe that future generations will benefit greatly if we who share the region of Asia can take on the shared task of establishing common standards for Asia, and move even one or two steps closer to this goal.