Interaction and Gap between Science and Engineering in Risk Governance: Perspectives of Science and Technology Studies

*Kohta Juraku[1]

1. Tokyo Denki Univ.

It has been discussed how to deal with the incertitude of expertise regarding the risks of natural disasters and complex artifacts. We have recognized the limit of our knowledge and humble attitude for these risk is now appreciated, while we cannot stop the best effort to protect our people and society from those risks. We have to face this ambivalent to utilize our expertise to decision-making and practice of risk-management, which is to be kept as fine states –that is the goal of risk governance.

In this context, science (scientists) and engineering (engineers) could collaborate each other, but could have tension between them at the same time, because they have different mission and purpose: science (scientists) define their mission as knowledge production itself, while engineering (engineers) have to solve the problem and show the solution for their clients.

If their expertise suggests any warning of risks such as disaster risk, scientists may try to share their concern with other stakeholder in society. In this case, their advice could often include risk avoidance strategy to deal with that risk. Engineers, on the other hand, they understand that their mission includes risk management by nature of engineering, and would not try to exclude other options of risk treatment: risk reduction, sharing and retention. It is optimization problem for them to deal with risk, with all of four options of risk treatment, and the risk avoidance is sometimes the least priority option for them, because the choice implies their defeat, in a sence.

Also, on the effect of engineering measures, engineers understand that it is a combination of their efforts and external conditions to reduce risk under the tolerance level, but scientists tend to think the best pair of maximum anti-disaster engineering measures and the preferable external condition could result in the least risk for us.

These fundamental differences in their principles to face the disaster risks could be amplified through complex interactions in risk governance mechanism and could lead serious miscommunication among them. It could result in the unacceptable dysfunction in society.

In this presentation, some perspectives of science and technology studies (STS) on this topic will be introduced taking the cases of controversy on seismic risk of nuclear facilities including the topic of “basis ground motion” and other to discuss the interactions and the gap between science (scientists) and engineering (engineers). The ideas to solve/mediate the issue and prevent further social dysfunction would be suggested.

Keywords: Science (Scientists), Engineering (Engineers), Risk Governance, Social Dysfunction

