A Reply from Sociologists

Beyond the Barriers between Civil Engineering and Sociology

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The massive earthquake on March 11th, the strongest ever to hit the quake-prone Japanese archipelago, devastated northeastern Japan more than any previous disaster by causing a huge tsunami along the Pacific coast, landslide, fire, and the worst-class nuclear power plant disaster in the history. As of January 11th 2012, the National Police Agency estimated that at least 19,294 people were dead or missing and 334,786 people living as evacuees. Miyagi Prefecture, hit hardest, and the neighboring Iwate and Fukushima Prefectures had no electricity; about 2,580,000 houses had total power failure, about 420,000 houses were cut off from city gas, and 1,660,000 houses' LPG was also facing the same situation. Such unexpectedly wide and continuous damage was almost the first experience for quake-prone Japan. As urbanization increases, compared to old times, the damage is different from today, even if the same area were hit by an earthquake of the same scale. Because we have reclaimed land from the sea and rivers, and cleared forests to expand the land available for housing, although these places were originally unable to support humans, we cannot make a living without highly systematic technology in not only the city but also rural districts. In particular, lifeline systems such as energy and water supplies, wastewater treatment, information, communication, and transportation are centralized and controlled by the government and rely on technical knowledge. You might say that urbanization, accelerated all over the country in various forms, is the process of exclusion of local wisdom that has supported a way of life becoming harmonious with original geographical features, vegetation, and climate. It is technological knowledge that is substituting local wisdom. Does the disaster corroborate that urbanization grounded on technological knowledge, which is expected to make society more convenient, causes more extensive and complex damage when society suffers from a natural disaster? I doubted this after the disaster. However, while doubtful, I attended a meeting of engineering expert speakers.

Two lectures and their corresponding question and answer discussions about the extent of disaster in Ishinomaki and the street project in Otsuchi brought me to establish several findings. It is well known that engineering experts are considerably shocked by the March 11 disaster and are reconsidering their way of engineering thinking. They conducted an on-the-spot survey of the earthquake-stricken area and offered opinions grounded on the survey, from the viewpoint of "hard" infrastructure in terms of facilities and materials and how they can develop applicable technology to prevent building drifts during tsunamis to the viewpoint of "soft" infrastructure such as evacuation plans like an evacuation area and a safety route suited to human intuition. They also recognized the engineering advantage that makes difficult tasks possible, which resulted in topics like "expanding land for housing" now being called into question. Frankly speaking, it was quite surprising for me that these engineers seriously look for a way of preventing the effects of a disaster with understanding each sphere of humans and nature; having watched an

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expert committee for infrastructure construction as a topic of study, I had rarely met such engineering experts before. They also seemed vexed and to realize that the technical knowledge for solving a problem rationally has been turned to account for a consideration of policy makers during the policy-making process. The earthquake disaster taught important lessons to engineers, and might lead to developing better or different technology; however, engineers were pessimistic that those learned lessons would be applied to the actually policy by the policy makers.

First, for disaster prevention measures, the concrete technology for a measure is chosen in consideration with the possibility of control or a forecast, hazardous area limit, potential damage scale, economy, feasibility, urgency, impartiality, and negative effect. In the selection stage, it becomes a problem of decision making in society and not one of technology. It is not necessarily true that the way of thinking of a policy maker and that of the pillar of engineering knowledge match. However, it is true that policy makers, especially those in charge of infrastructure construction, rely on engineering knowledge, but the knowledge twists scientific rationality in the policy-making process, and as such, is reflected mainly of policy and not engineering because of that power.

It was also obvious for the pillars of engineering knowledge that infrastructure construction is impossible by only applying knowledge based on the physical law. During the meeting, I came to know that we, the pillars of sociological and engineering knowledge, share the importance of local wisdom and a way of life rooted in the concrete natural environment. Noticing my personal misunderstandings about the pillar of engineering, I feel that we should pursue how engineering knowledge is considered in policy-making and is applied to power. Engineering knowledge may be the problem itself. Sociology is the same in terms of its knowledge. It might be expected for pillars of knowledge, beyond the branch of learning, to maintain the knowledge that leads to a solution for the problems that arise when people hope for a sustainable daily life in a land that has a concrete historical natural geography to the stage of policy making without twist from power.