

Some Thoughts on Research and Education: Disaster Science and Learning

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For many years, I have been involved in research and education of building structures and earthquake engineering as a countermeasure against earthquakes, based on the basic theory of vibration and waves. I have also worked on comprehensive earthquake countermeasures for cities and buildings. Here, I will describe the general view of what I would like to convey about research and education in disaster science to the young people who will lead the next generation.

The academic field of disaster science involves many disciplines, including science, engineering, sociology, and medicine. It requires both interdisciplinary cooperation across the specialized fields as well as what the International Research Institute of Disaster Science strives toward - building practical disaster prevention science through the fusion of the humanities and sciences.

It is difficult to describe the Great East Japan Earthquake from 10 years ago in a few words, but if I had to, I would describe it simply as "a huge earthquake that hit a fragmented society". The key to disaster preparedness, as our predecessors taught us, is to understand and eliminate weaknesses. Comprehensive earthquake countermeasures for cities and buildings must be based on innovative combination, which involves looking at things from different angles and perspectives and combining different elements to create something new.

What is important in disaster research is to scientifically elucidate the border of light and dark, in terms of both what is tangible and intangible. In the Great East Japan Earthquake, the issue of mental health support also became apparent. It is necessary to sort out the positive and negative factors. Clarification and scientific elucidation of the intersection of positive and negative factors will be the starting point for the next phase of disaster management.

Disaster prevention has not yet been classified academically as "Disaster Prevention Science". In order to systematize various kinds of knowledge as a discipline, it is necessary to find and analyze the differences among various elements, as well as identify and integrate the commonalities they have. Systematizing and organizing through analysis and integration will lead to understanding the relationship between the whole and the subsections. In addition, what is necessary for disaster reduction is the clarification of input-output relationships and the concept of disaster control. For earthquake countermeasures, disaster control is required to reduce earthquake damage caused by the input of an earthquake's shake through the outputs of reliable physical and social systems.