



Ritsumeikan University
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of Strategy on Disaster Mitigation
of Cultural Heritage and Historic Cities

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■ Research Topic ■

Leveraging Traditional Knowledge on Disaster Mitigation

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If we look closely at historical disasters, it becomes apparent that there are facilities and a body of knowledge relating to disaster mitigation which are unique to that region. Most learnings relating to disaster mitigation are replicable with modern technology. In recent years, large-scale disaster mitigation facilities using high-level technology have been built. However, operation of these facilities needs a considerable amount of expenditure and large amounts of energy. Also, these modern and large-scale hi-tech disaster mitigation facilities are susceptible to having their lifeline cut and becoming inoperable when earthquakes occur. In answer to this, although disaster mitigation knowledge derived from historical disasters can be called “low-tech,” these facilities are highly likely to remain operable during disasters because of a simple and small-scale facility structure and because they do not rely on energies such as electricity. For example, facilities are designed so that they can be easily restored on-site in case of damage. So, it is possible to leverage disaster mitigation knowledge derived from historical disasters and incorporate this knowledge into modern facilities and frameworks relating to disaster mitigation.

With this in mind, let us examine the chart on the right for a method to derive knowledge on disaster mitigation. Firstly, we list all the disaster mitigation learnings we can think of from areas such as restoration research of historical disasters. For each specific disaster mitigation learning, we fill a record with items such as name, point of origin, characteristics, function, effectiveness, current state, distribution, lists of prior research and photos, and distribution maps. In addition, we separate useable and unusable knowledge, conduct a quantitative evaluation on which knowledge to ultimately use, and incorporate the potential ones into plans and businesses. This is the ultimate goal. When incorporating this knowledge into plans and businesses, the framework should be explained to the local government and citizens to gain their understanding. This is to achieve a sense of comfort regarding disaster mitigation facilities and the framework as well as to gain the cooperation of local citizens in cases where repairs are necessary. By following the above process, you are finally able to utilize disaster mitigation knowledge.

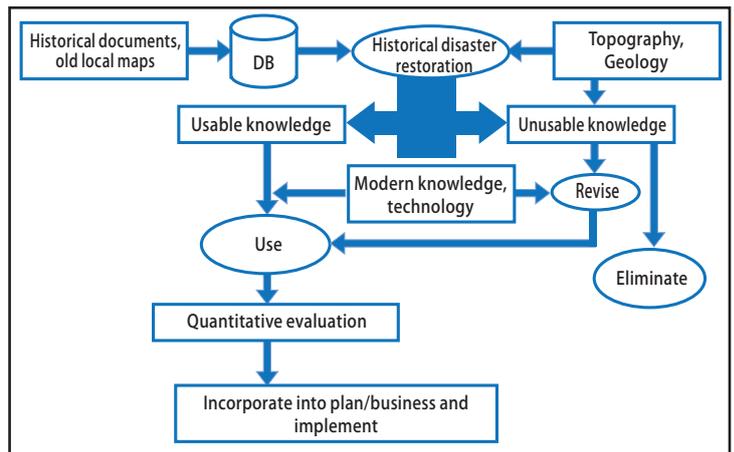


Chart 1: The derivation process for disaster mitigation knowledge

Let's take a look at the Udatsu for understanding the final concept (“Udatsu” refers to a fire preventive structural element used in Japanese traditional residential houses.) The effectiveness of Udatsu has not been confirmed yet and, therefore, we cannot say for sure, but even if Udatsu does have an effect against a small fire, they are probably not effective against a large fire. Therefore, it would be unfeasible to only incorporate Udatsu into plans and businesses as knowledge relating to disaster mitigation. If you are truly going to try and incorporate Udatsu into plans and businesses, then perhaps there would be a higher probability of realizing this if it was combined with preservation activities which encompass the whole town, including other knowledge such as mud walls (Shirakabe), fire preventive storehouse (Dozou), and artificial ditches. There is no argument that the chance of realizing goals would be higher, and it would be easier to gain understanding if elements of things such as tourism were included, rather than just aiming for disaster mitigation.

Commencement of Joint Research with Tsinghua University (China) Beijing Tsinghua Urban Planning & Design Institute!

On May 12, 2008, an earthquake of magnitude 8.0 occurred and there was extensive damage in Sichuan, China. Of particular note is the city of Dujiangyan. It was registered as a World Heritage site in 2000, and sustained devastating damage to water facilities and temples, in addition to historic urban areas dating back 2300 years. The number of tourists dropped dramatically from 8 million people a year to 4.5 million people a year. The economic loss resulting from this impact is estimated at 150 billion yen.

From 2009, we have held an annual conference with the Tsinghua University (China) Beijing Tsinghua Urban Planning & Design Institute concerning joint research in order to advance disaster mitigation of tourist towns centered around cultural assets. As a result, based on mutual agreement, we signed a Memorandum of Understanding to promote sharing of research related to risk management (disaster mitigation, preservation, etc) for cultural assets in the “East Asia Wooden Architecture Cultural Area.” For the Tsinghua University Beijing Tsinghua Urban Planning & Design Institute it was decided that three organizations would participate: Public Safety Institute, Institute for Cultural Heritage, and Center for Urban History and Culture.

A research framework on cultural asset protection between Japan, Korea, and China, has been organized based on the cooperation between our school, Myongji University (Korea, signed MoU in 2008), and the Tsinghua University Beijing Tsinghua Urban Planning & Design Institute, respectively, one from each country. By utilizing the research conducted up to this point, we will commence cooperative research involving three countries to “Protect and preserve the cultural assets left through the transmission of Buddhism.”



Photo 1: A photo of damage to a part of the Two Kings' Temple cultural heritage building in Dujiangyan

The Conference on Cultural Heritage and Historic Cities Disaster Mitigation' 10

On July 3 (Saturday), 2010, the Conference on Cultural Heritage and Historic Cities Disaster Mitigation '10 was held at the Ritsumeikan University Kinugasa Campus. There was a lively discussion and reports on research findings on 45 different topics concerning disaster mitigation for historical cities and cultural assets. There were more than 200 participants across the country and we were observed a high level of interest in disaster mitigation for historical cities. The next year's conference (2011) is also scheduled to take place around July.

Furthermore, the research results reported during the conference was published as "Disaster Mitigation of Cultural Heritage and Historic Cities Vol. 4". If you would like a copy, please contact the office. However, please note that most of papers are only available in Japanese.



Photo 2: A shot of the conference



Photo 3: A shot of the conference

We conducted the 2nd Ideas Competition for Strategy on Disaster Mitigation of Cultural Heritage and Historic Cities

On July 3 (Saturday), 2010, at the Ritsumeikan University Kinugasa Campus, we conducted the secondary examination and awards ceremony for the 2nd Ideas Competition for Strategy on Disaster Mitigation of Cultural Heritage and Historic Cities. There were 43 submissions from across the country and a public review meeting was held for the 7 submissions that were selected. Through the process of deliberation by the examiners that followed, awards were given to 10 submissions, which included “special awards.” For details regarding the results, please take a look at the competition website (<http://www.bunkaisan-competition.jp/>). We would like to express our gratitude to all the entrants and participants at the event.



Photo 4: The presentation



Photo 5: Top Prize “Historic Gate” (Team representative: Ritsumeikan University - Tomohiko Takahashi)

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