Chapter 50

Communication of Disaster Science

Field of expertise: Social Science, Public Relations, Science Communication

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Summary

In the wake of the Great East Japan Earthquake, existing science communication was called into question. Since then, more efforts have been made to share disaster science with society, including a three-year project in which researchers collaborate with the media to convey their findings to society. It is not easy for experts and citizens to reach a mutual understanding of disaster science. Today, however, all members of society are stakeholders in science, and it is important also for non-specialists to take an interest in science and actively participate in science communication.

Keywords: disaster science, science communication, collaboration between researchers and the media

Introduction

Recently, the necessity to share science with the public and avoid keeping science only among specialists is more emphasized. Conveying disaster science to society is especially important, because it is directly associated with people's lives and safety, and society is also interested in disaster-related knowledge. The 2011 Great East Japan Earthquake was an opportunity to rethink the existing way of science communication.

1: Science Communication in Japan and the Great East Japan Earthquake

Taken in the broad sense, science communication can be traced back to the Edo period, as writings to disseminate knowledge about nature already existed at that time. It was the Meiji period when modern science was introduced. Enlightenment activities on science had been conducted through books, scientific and general magazines, and lectures until World War II. After the war, the Science and Technology Agency, established in 1956, took a leading role in publicizing and raising awareness of science and technology. The 1970s saw the high economic growth period and the anti-pollution and anti-science and technology currents in society. In the 1980s, policy shifted from simply developing science to recognizing that the advancement of science and technology is for the benefit of society. Later, promotion of science communication to attract youth became also important, to address the issue that many young people avoid majoring in science. In 1995, the Science and Technology Basic Law was enacted (Fujigaki & Hirono, 2008). In the 2000s, one-way

enlightenment activities to compensate citizens for lack of scientific knowledge became recognized as problematic, and the importance of interactive dialogue and outreach activities by scientists began to be emphasized. Several universities established science communicator training courses (Shineha, 2016). Basically, science communication at that time was still aimed at improving citizens' understanding of science (Tanaka, 2013).

The Great East Japan Earthquake raised fundamental doubts about the situation, however. Citizens desperately needed reliable scientific information in reaction to the devastating earthquake, tsunami, and subsequent nuclear accident. On the contrary, the experts' communication to the public was confused, which ended up eroding confidence that citizens had in the experts. Accordingly, the scientific community had to reconsider the conventional way of science communication. The 2011 disaster also raised interest in risk communication, which is to share and discuss risks in society based on science in order to build consensus with stakeholders (Tanaka, 2013).

Let us now turn our attention to the state of science communication in Western countries. The BSE (mad cow disease) issues brought up in the UK in the 1990s led to the distrust of the government and scientists, questioning the relationship between science and society. It revealed that increasing citizens' scientific knowledge did not necessarily solve social problems. After this, society shifted towards citizens participating in the decision-making process and social problems needing to be solved based on the integration of science and knowledge of stakeholders in place. The Great East Japan Earthquake can be compared to the BSE issue in the West, in the sense that it questioned the relationship between science and society, urging reconstruction of the way of science communication (Tanaka, 2013).

2: A New Approach

Since the Great East Japan Earthquake, there have been a number of efforts and pursuits to develop communication of disaster science. Many universities and research institutes, including the International Research Institute of Disaster Science (IRIDeS) at Tohoku University, have provided opportunities for citizens to share scientific knowledge, including web pages, public lectures and science cafes. There have been many educational activities for disaster risk reduction where disaster researchers have been involved. These can be considered also as a part of disaster science communication in a broad sense.

One of the advanced science communication activities that I was involved in was a collaboration project between academia and the media conducted over three years from 2016. This project was to deepen mutual understandings between researchers and media professionals who are key people in conveying disaster science to the public quickly in plain language. During the project, both sides searched ways to collaborate in disaster risk reduction and in succession of disaster experiences. Opportunities were provided for dialogue between researchers and people involved in newspapers, television, radio, and online media in various regions. Also, activities were conducted in cooperation with academic and media organizations. One of the noteworthy collaborative activities was one between researchers and the Asahi Student Newspaper. In the activities, disaster researchers and elementary school children who are readers of the company's newspaper conducted fieldwork in the disaster-affected area together (Photo 50-1), and the children published their experiences in the newspaper. Also, researchers wrote a relay series of articles for a total of one and a half years, explaining basic knowledge and latest findings in

disaster science in plain language for elementary school readers (Photo 50-2). These articles provided an opportunity for children and their parents to become familiar with disaster science, and for researchers to explain science in an approachable manner to the public. Those were fruitful activities, promoting communication between researchers and the younger generation through media.

Photo 50-1. Disaster science researchers and elementary school children conduct research together in disaster-affected areas (March 2017, Arahama, Sendai City, Miyagi Prefecture)

Photo 50-2. An example of a relay series of articles by researchers in a newspaper for elementary school children

3: Achievements and the Future

Has the communication of disaster science changed after the Great East Japan Earthquake? The post-disaster policies of Japan clearly reflect the necessity of bidirectional communication and the importance to address ethical, legal, and social issues (Shineha, 2016). According to a survey by the Ministry of Education, Culture, Sports, Science and Technology, the level of public trust in scientists, which fell to about 40% immediately after the disaster, recovered to about 80% in 2018. To date, however, a lecture format with relatively weak interactivity has still

been most common in the occasions of science communication, such as a presentation by a researcher followed by a brief question-and-answer session with citizen participants. Seemingly, unlike the West, Japan has not yet shifted to a society where citizens participate in the decision-making process to solve problems by integrating scientific and vernacular knowledge. A possible reason is that citizens' sense of entitlement and social contexts are different between Japan and the West. It is important to note that it is never easy for scientists and nonscientists to share the forefront scientific knowledge and to reach mutual understanding, as it tends to contain uncertainty and there is often more than one right answer. Piecing these circumstances together, we likely cannot yet conclude that a major paradigm shift in science communication has already been completed in Japan after the 2011 disaster. However, media participants in the academia-media collaboration project say that Tohoku University researchers have become more proactive in communicating with society since the earthquake. Revealing the reality and challenges, the Great East Japan Earthquake surely became a turning point to pursue a better way of science communication.

Conclusion

As I write this paper, COVID-19 is bringing the situation and issues of science communication to light once again, questioning relations among various stakeholders, including experts, politicians, media, and citizens. In the future, whenever the safety of society becomes threatened and a science-based response is required, the relationship between science and society and the way of science communication will be reconsidered and reconstructed. Whether we like it or not, science inevitably influences our daily lives today. Stakeholders involved in science communication are not only researchers who are the producers of scientific knowledge, they are also the media who disseminate the knowledge in an easy-to-understand manner, and science communicators of academic institutions like myself, who bridge science and society. It is also important for citizens to be interested in science and science communication, and to participate in science-related decision making.

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