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3.2.3 Risk communication: How to share and overcome the negative aspects of risk

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Abstract

Out of the multifaceted components of science and technology communication, "risk communication" refers to both a way of thinking and the implementation of measures to share and overcome the negative aspects of risk assessment and risk management among stakeholders. This paper outlines the historical background of the necessity of risk communication, and explains how participatory technology assessment can be used as an extension of risk communication.

Keywords

Risk communication, information deficit model, expertise and trust, participatory technology assessment

1 Background of the necessity of risk communication

1.1 The 1970s: The rise of the psychology of risk

Among the many definitions of "risk," a typical one describes it as the product of two factors: the severity of any given resulting damage (i.e., loss) and the probability of said damage occurring. Since the 1960s, research has focused on the perception of risk by the general public—that is, how risk is perceived by non-experts—as opposed to quantitative representations of risk. As a background to the popularity of risk perception research, social concern regarding the risks of science and technology and their related products

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has increased since the late 1960s, due to frequent pollution and drug-related problems, both in Japan and abroad. Typical studies from this period (Slovic et al., 1979; Slovic, 1987) have shown that (1) there is a difference between experts and the general public when it comes to risk perception; and in particular, (2) experts perceive risk in terms of the number of victims (measured or estimated), the probability of occurrence, and the severity of damage, whereas the general public views risk according to different factors like "fear" and "unknowability."

1.2 The 1980s: Establishing the concept of risk communication

As the differences in the way experts and the general public perceive risk became clearer, other questions arose. More specifically, while it is clear that experts and the general public perceive risk differently, the question is which of them should be considered "correct."

There are two main ways to interpret the gap between experts and the general public. The first takes a corrective approach to solving this problem, which is expressed in the "information deficit model" (Wynne B., 1996). According to this model, the public tends to have a distorted perception of risk due to bias, and that in order to properly manage the "risks" of science and technology, the public must be provided with accurate information and their risk perception must be corrected. The other view holds that the difference is not due to the amount of knowledge but is rather about the different components of risk they perceive. Accordingly, it is not appropriate to interpret this gap in terms of whether one is more "accurate" than the other.

Until around the 1970s, the prevailing view hewed to the information deficit model—that is, that the solution to the problem lay only in improving understanding. Accordingly, a group of experts conducted the risk assessment, and the general public was informed of the results.

At the same time, the New Research Council (NRC) asserted that "risk communication has traditionally been understood as one-sided communication from experts to non-experts, with acceptance of the communicator's intentions as a sign of success. The NRC committee views risk communication as a process of information and opinion exchange among groups, individuals, and organizations, and considers increased levels of understanding and trust among those involved to be a sign of success" (National Research Council, 1989). As this statement reflects, risk communication since the 1980s has shifted to two-way communication and shared understanding. This approach is also the origin of the current dominant definition of risk communication as "activities to share diverse information and perspectives through dialogue, shared awareness, and collaboration among all segments of society for better risk management" (Committee on Safety and Security Science and Technology and Social Cooperation, Ministry of Education, Culture, Sports, Science and Technology, 2014).

1.3 The 1990s: Risk communication and trust

Another major turning point in thinking about risk communication occurred in 1995. On the domestic front, the Great Hanshin-Awaji Earthquake struck on January 17, 1995, killing 6,434 people. Exactly one year prior—on January 14, 1994—the massive Northridge earthquake hit the San Fernando Valley Region of Los Angeles in the United States, causing massive damage, including collapsed highways. Despite Japanese government inspectors and civil engineering experts claiming that similar damage would not occur in Japan, the Great Hanshin-Awaji Earthquake saw a highway collapsed in a similar fashion, killing more than 6,000 people. In the case of the Monju accident, which occurred on December 8, 1995, the severity of the accident resulted in a loss of confidence in the "competence" of the experts, while the suppression and biased editing of video footage of the accident led to accusations of concealing information. As such, the social incident symbolically demonstrated the decline in confidence in experts and their conduct.

Meanwhile, risk management in Europe reached a turning point with the discovery of the BSE problem during the 1990s. When the problem was first discovered, the British government and a group of experts declared that there would be no human casualties. However, a few years later, a mutated form of Creutzfeldt-Jakob disease was discovered, and human infections surfaced. This led to a major loss of trust in the government and professionals in the UK. This trend became more evident with the controversy surrounding Genetically Modified crops, which intensified in the late 1990s.

In this context, the concept of risk management in science and technology has changed from a public understanding of science (PUS), which aims to instill knowledge in non-experts, to public engagement in science and technology (PEST), which emphasizes sharing the risks of science and technology—including its uncertainties—through dialogue and public participation in social decision-making in respect to the introduction and regulation of science and technology.

2 Risk communication in the future

2.1 Risk communication today

In the social context presented thus far, it has been emphasized that risk communication is not a conventional framework of education and persuasion, but a "process of interaction of information and opinion exchange among individuals, organizations, and groups" (National Research Council, 1989), and that it is essential to underscore the importance of this process. This new concept of risk communication focuses on the interaction of information about risk. In other words, it is based on the interaction between communicators and receivers in a way that influences how risk is managed, rather than the unidirectional provision of risk-related information from communicators (often governments and experts) to receivers (often the general public) as expressed by the information deficit model.

It is also considered important to include all messages, including information focusing on social aspects and not only those limited to so-called scientific "risks." In this respect, the social dimension includes risk management, the nature of risk management policies, the rationale for decisions, resultant social reactions, as messages about individual opinions and values. Moreover, recent years have seen shifts in risk communication from ex post to ex ante. In other words, there has been a shift toward a "proactive" approach, where communication opportunities are set up before a certain science or technology is put into practical use or sometimes even in the early stages of research and development, rather than dealing with risks after they have emerged. The idea is to conduct risk management based on advance communication among various stakeholders, including how the risks should be managed.

2.2 Risk communication and participatory technology assessment

In another context, this idea of risk management has been developed as "participatory technology assessment" (Participatory TA). Emerging in the United States in the late 1960s, TA is an activity and a way of thinking for making predictive assessments of both the positive and negative social impacts of new science and technology, and is used in the planning of science and technology policy. In 1972, it was institutionalized as the US Congressional Office of Technology Assessment (OTA), and its activities spread to European countries in the 1980s. Against this background, the Danish Board of Technology (DBT), part of the Danish Parliament, proposed a new method of participatory TA. In contrast to conventional TA, which is evaluated by experts, participatory TA is conducted by stakeholders and the general public (including those potentially affected) affected by the science or technology in question. Typical examples include the consensus conferences developed by the DBT and actively promoted in Japan from the 1990s to the early 2000s, with similar attempts in other fields. Although these participatory TAs have developed without direct links to the aforementioned development of risk communication, they have emerged from a similar awareness of the problems associated with the changing nature of science and technology in society.

2.3 Risk communication in Japan after the Fukushima accident

In respect to the various exchanges between experts and citizens on issues of risk in the 1970s, when risks in science and technology—both domestic and international—became apparent, experts treated their quantitative risk assessment as "correct," while regarding citizens' perceptions of risk (which they often deemed as exaggerating risk) as irrational and based on misunderstanding. However, the skepticism was mutual: the public viewed experts with distrust, often believing that they were trying to hide risks they found inconvenient, and thus putting the public at risk. This is a model for the past, but it is also a model for the present.

Indeed, much of the confusion surrounding "radiation risks" after the Fukushima Daiichi Nuclear Power Plant accident—including the immediate post-accident confusion over radiation and ongoing problems with contaminated water, radioactive waste, and low-dose exposure—has been caused by this difference in the way experts and the general public perceive risk, as well as their different approaches to dealing with and framing them. In the context of this case, while a certain amount of radiation knowledge is necessary, anxiety about radiation cannot be dispelled simply by introducing (allegedly) "correct" information. Moreover, those who take issue with these risks are not only concerned with quantitative radiation risk, but with risk governance as a whole, including the policy decisions surrounding how risk is handled. In a society where the asymmetry of trust principle is firmly in force, it is extremely difficult to blindly trust what experts say, especially in the face of a hitherto unprecedented nuclear accident. In a situation where everyone is trying to make a complete decision based on both public statements and countervailing information (i.e., information that warns of danger), it is incumbent on groups of experts to provide detailed and well-founded information as a basis for judging what is accurate, not simply a single “correct” source of information. This is something that has been repeatedly emphasized in the field of risk communication research and practice.

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- Deconavi
  http://decocis.net/navi/

Information on related base course subjects and research projects

- STiPS Osaka University, “Introduction to science and technology communication A” (1 credit, Spring semester)
- STiPS Osaka University, “Introduction to science and technology communication B" (1 credit, Summer and Winter semesters)

  *As of April, 2019