The Recent Rise of Risk Discourse in Japan: Tension between Technocratization and Democratization in the Governance of Science and Technology.

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Introduction

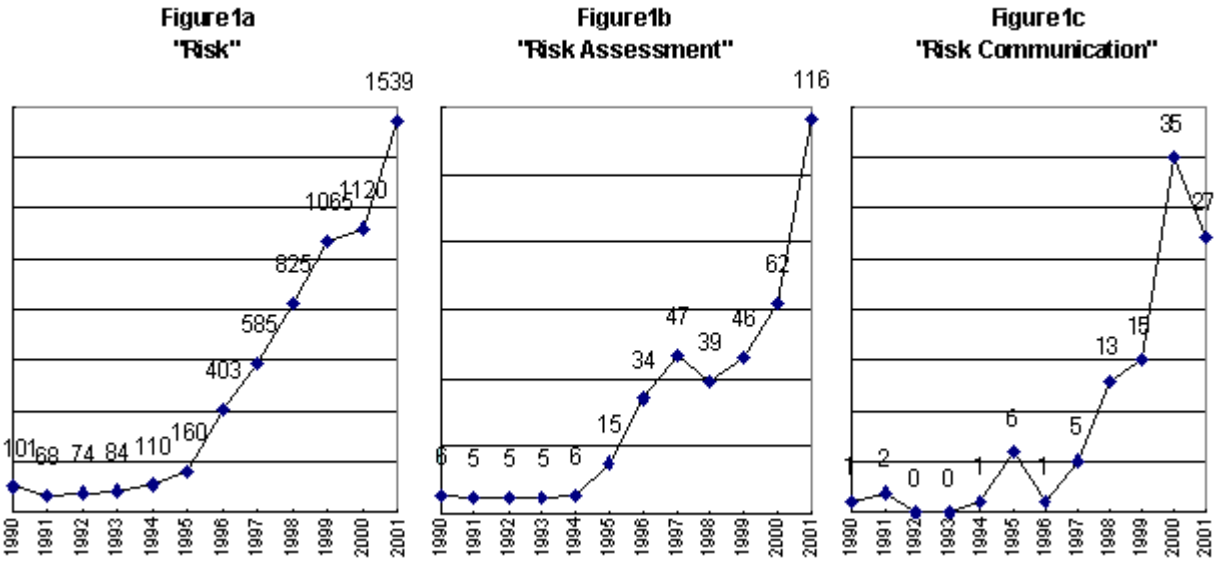
Since mid-'90s in Japan, the word "risk" and other concepts of "risk analysis", i.e., *risk assessment*, *risk management*, *risk communication*, *risk-benefit analysis* and so on, has rapidly gained popularity in public discourse of experts, which I will call the "rise of risk discourse". Fig.1 shows the frequency of some of those words appeared in the title of articles in both general and technical literatures in Japan[1]. Traditionally, these terms had been rarely heard and read outside experts' communities. They had concealed carefully the fact that every technology has risks, telling the public that it is safe, or sometimes, it is *absolutely* safe. Even after the calamity of Chernobyl, Japanese nuclear community confidently declared, "Such accidents will never happen in Japan". The turning point was the outbreak of various technological accidents and subsequent fast decline of public confidence in science, technology and relevant policy. While the Society for Risk Analysis Japan-section had already established in the late '80s under the influence of US's Society for Risk Analysis, the sudden conversion to *exotericism* of risk discourse was largely expert's response to the mid-'90s crisis.

At first glance, this response seems a sign that arrogant experts finally confessed the truth of science and technology and set out to the governance of them with modesty, but the reality is not so happy. There are at least two forms of response that enforce experts to speak out the technological risk in the public: it may be said that one is *technocratic response* and the other is *democratic* one. In the first form of response, particularly evident in a case of nuclear power policy, the risk analysis is used as a symbolic weapon to shout up the mouth of public criticism and to persuade the public to accept it. There is a shift of the persuading rhetoric from "absolute safety (zero risk)" to "acceptable risk". On the other hand, in the second form of response, the risk analysis is mobilized to protect the public safety and to promote the public involvement in the regulatory decision-making. While the former has been predominant so far, the latter is now gradually, or awkwardly, coming into public policy arena, especially after the BSE crisis in Japan.

[1] As shown in Fig.1, the frequency of the appearance of the word "risk" is much greater than the other words. It may be presumed that this is partly due to the increase of use of the word in economic areas.

In this paper, I will at first give a brief description of the background of this change of regulatory discourse and practice of experts and policymakers (section 1), and then analyze the two forms of thrust for the governance of science, technology and society, respectively (section 2 and 3). Finally, I will make a remark on the prospect and problems of this transition.

Figure1: Frequency of Risk Words in Japanese Magazines and Journals



Source: Nichigai Associates Inc., MAGAZINE PLUS, which includes academic journals in social science, humanities, science, engineering and medicine as well as general magazines written in Japanese. The number shows the frequency of three words appeared in the title of articles in these literatures.

1. Background of the Rise of Risk Discourse: Collapse of Safety Myth

The year of 1995 was a historic year for the relationship between science, technology and the public. There happened two dramatic events. At first, in the early morning on January 17, a big earthquake struck on Kobe City that is one of large cities in the west part of Japan and more than 6000 people were killed. It is customarily called 'Kobe Earthquake' and its economically estimated damage amounted to more than US$180 billion. However, what were shaken by Kobe earthquake were not only lives of people and physical structure. So-called 'Safety Myth (*Anzen Shinwa* in Japanese)', the public faith in the infallibility of science, technology, experts and government, was another casualty. When the Northridge earthquake hit the city of Los Angels in the United States just a year ago, on January 17, 1994, many of Japanese experts declared with full confidence, "Japanese buildings are safe enough". However, it was thoroughly disproved by the Kobe earthquake.

Another event was a nuclear accident at the prototype fast breeder reactor (FBR) "Monju" on December 8, 1995. Sodium used for coolant leaked out and a fire broke out. While the accident was classified by the Japanese authorities as Level 1 on the International Nuclear Event Scale (INES) of the International Atomic Energy Agency (IAEA), its social impact on both the

public and nuclear community was very serious. In particular, the impact on the nuclear policy community was decisive. First of all, since then, the operation of Monju has been stopped and the development of the nuclear fuel cycle (uranium-plutonium cycle) has been long delayed. At the same time, the attitude of authorities towards the public dramatically changed. What is the most dramatic was the sharp difference of the contents between *White Paper on the Nuclear Power 1995* (AEC, 1995) published in October 1995 and *White Paper on the Nuclear Safety 1995* (NSC, 1996) published in March 1996. As for the safety of nuclear facilities, the former paper optimistically stressed the safety and robustness of the security measures and didn't refer to the public distrust of nuclear power and its policy. On the other hand, the latter paper claimed the loss of public confidence repeatedly and pointed out the lack of transparency and accountability of nuclear policy and management.

In addition, immediately after the accident, on January 23, 1996, three governors in Fukushima, Niigata and Fukui prefectures having a lot of nuclear power plants are operated made a proposal to the government that demanded the democratization of nuclear policy-making as well as reconsideration of nuclear development programs. As a result, on March 15, 1996, the Science and Technology Agency (STA)[2] and Ministry of International Trade and Industry (MITI)[3] jointly published a statement "Toward the Formation of National Consensus on Nuclear Policy" (STA & MITI, 1996) and decided to convene the Round Table on Nuclear Policy, which was held in 1996, 1998 and 1999. During the first series of the conference in 1996, in response to the conference's recommendation, the Atomic Energy Commission (AEC) published the decisions "On the Promotion of Free Access to Information and Public Participation in Policy-making of Nuclear Power" on September 25, 1996 and subsequently on October 11 "For the Future Development of Nuclear Policy".

In spite of such an effort of government, further critical events attacked on the nuclear community in the subsequent years. On March 11, 1997, a reprocessing plant in Tokai village in Ibaraki Prefecture suffered fire and explosion. 30 workers were exposed to radiation and the radiation was released to environment. The accident was classified as Level 3 on the INES. The most decisive event was the JCO (Japan Conversion Operation Co. Ltd.) Criticality Accident in Tokai village on September 30, 1999, and its INES Level was counted as Level 4, which was the worst case in Japanese history of nuclear power (NSC, 1999; CNIC, 2000). As a result, according to a public opinion poll taken by the Research Council for Energy and Information Technology (EIT, 2002), the percentage of the public who supported promotion of construction of nuclear power plant dropped down from 39% in 1994 to 25% in 2001, and between 1998 and 2001 it distinctly decreased 7%.

Along with those events in nuclear policy and industry, a lot of small but significant technological accidents happened in other areas in the late '90s, which also accelerated the

[2] STA is now integrated into the Ministry of Education, Culture, Sports, Science and Technology (MEXT).

[3] MITI was reorganized as Ministry of Economics, Trade and Industry (METI).

decline of public confidence in experts, industry and policy communities. In addition, especially after the first publish of Japanese translation of *Our Stolen Future* in 1997, environmental risks of hazardous chemical substances such as endocrine disruptors, dioxin and PCBs have become one of the hottest public issues. Among others, the result of nation-wide investigation on the dioxin pollution from garbage incineration plants by the Ministry of Health and Welfare (MHW)[4] shocked the public deeply. It revealed that, in many sites, the pollution levels much exceeded the standard and some of them were greater than several thousand ppt in the soil. And it also showed that the Japanese standard was much looser than European countries and USA. Many citizen groups and environmental NGOs were formed and organized protest campaign against the government policy and chemical industry. Furthermore, since the first approval of import of genetically modified crops (GM crops), as in European countries, consumers unions and environmental NGOs has been carrying on a campaign against the genetically modified organisms (GMOs) and public anxiety has also grown up. More recently, in September 2001, the BSE crisis broke out in Japan. As of June 18, 2002, 4 cases of infected cows have been verified but, fortunately, no human victims of vCJD (variant Creutzfeldt Jakob Desease) have been found.

2. Technocratic Response: Risk Discourse as a New Style of PA Rhetoric

The response of experts and government officials to the crisis has been largely running in two directions: 'technocratization' and 'democratization' of decision-making concerning science and technology. In this section, I will trace the former direction.

Generally speaking, the technocratic response has been taking two forms: the one is further promotion of PA (Public Acceptance) activities with transparency and openness of operation and policymaking of nuclear power, and the other is the propagation of 'risk discourse' among the public. At first glance, those responses seem democratization rather than technocratization. The reason for calling them as technocratization, or *re-technocratization*, is that they still assume a certain scientific validity of their claims either on the relative safety of technological systems as such or on the results of risk assessment while it is that validity that are in question for the public's eyes.

Promotion of PA has been the foremost response of nuclear community and is based on a problematic distinction between the *technical safety* (*Anzen* in Japanese) and public *sense of security* (*Anshin* in Japanese). This distinction reflects the basic assumption of experts and policymakers that it is the lack of transparency and accountability, for example cover-up of information and forged data and so on, that turned out to be wrong through repeated accidents and failures in crisis management, while the technical safety as such has a secured basis. For them, it was only a *moral* and *credibility crisis*. They believes that what they lack are the clarity and easiness of their explanation of the safety of nuclear power, and the public access to the

[4] MHW is now integrated with the Ministry of Labor into the Ministry of Health, Labor and Welfare (MHLW).

relevant information. Thus, they started earnestly to promote the PA activities such as establishing clearinghouses, disseminating information through internet, exhibition for children, including hands-on type, at the science pavilions of electric power companies, television programs, seminars and so on.

The second form of technocratic response, the propagation of risk discourse, is by and large an updated style of PA activity, though the focal point is shifted from safety to risk, or from *acceptance of safe technology* to *acceptance of risk*. In this regard, the first thing to note is that *risk communication* is sometimes considered as a socio-technical and socio-psychological instrument for PA activity, rather than a political means for deliberation among all stakeholders. It was *White Paper on Environment 1996* (EA, 1996) in which the term 'risk communication' was officially used for the first time in Japan. Although it rightly referred to the NRC's report, *Improving Risk Communication* (NRC, 1989), and placed an emphasis on the necessity of cooperation with the public through the two-way communication as well as adequate understanding risks, in general, this basic principle is easily dismissed. An illuminative example is the report of the Committee for the Evaluation of Nuclear Public Relations (CENPR), *The Report of Committee for the Evaluation of Nuclear Public Relations* (CENPR, 2000), whose essence is evidently shown in the following passage:

> In order to make definite efforts to relieve public anxiety for nuclear power, to recover the public confidence and to improve the public understanding of risk and safety of nuclear power, it is effective for nuclear public relations to make full use of the methods of so-called "risk communication"… And it is important that the *receivers* are to get basic education to make judgment on and cope with various risks so that they may *accept* the risks. (ibid, p.59: italic mine)

Here is a lucid illustration of defining risk communication as a tool for conveying 'risk message' to correct the public attitude and knowledge about risks without self-examination of proponents who pose the risks. In this definition, the public appears only as *receivers* of risk message and all they can do is to *accept* the risks.

With this strongly biased and old-fashioned conception of risk communication in mind, now we turn to the contents of risk message conveyed in that communication. There are two sorts of messages: one is the *risk information* that is about scientific nature and magnitude of individual risks, and the other is the *risk thinking* that is a scientific way of thinking about risk. What is important here is the latter kind of messages and it has several typical assumptions they are based on. Here I will take three examples of them.

The most familiar assumption is the dichotomy of the *objective risk* and *subjective risk*, or experts' recognition and lay public perception of risk. Often cited is the Slovic's psychometric study on risk perception (Slovic, 1987), according to which the risk of nuclear accident estimated by scientific experts is much smaller than that of laypersons (i.e. league of women voters, college students and activists). Slovic himself presented this result in order to show the

fact that experts and lay people have different definitions of very concept of risk, implicitly contrasting complicated and multifaceted conception of lay public with simplistic and narrow one of experts. However, it tends to be capitalized on to highlight the (alleged) fallacy of lay risk perception, neglecting the depth and width of lay conception of risk.

Furthermore, such an assumption based on the deficit model is sometimes accompanied by explicit anti-democratic thinking of experts. For example, Shunsuke Kondo, one of the leading nuclear engineering experts in Japan and the president of the International Association for Probabilistic Safety Assessment and Management (IAPSAM), states as follows in the contribution to the Japanese edition of H.W. Lewis's *Technological Risk* (Lewis, 1991) that is translated by another nuclear expert:

> Public management of risks is called regulation. The regulation is by its nature to regulate the magnitude of risks but should not decide the appraisal of technology posing that risk. … Some say that any technology appraisal should be subject to the democratic decision-making. However, if the appraisal depends on the size of political support, it would be political discrimination against those who want to use that technology. (tr. by the Author)

One of the problems of this claim is that it limits the scope of the risk regulation only to controlling the magnitude of risks. To accept the risk and technology that accounts for that risk is set forth as a premise and the room for choosing alternatives is never allowed. Another problem is that it implicitly identifies the democratic decision with mere a majority rule, or *mob* rule, neglecting the deliberation process and its contents reaching the decision[5]. It clearly shows the experts' hostility to democracy that is depicted in detail by Bruno Latour in his Pandora's Hope (Latour, 1999).

The second assumption of risk discourse is the alleged *lay public's fallacy of zero-risk*: that is, lay people have an unrealistic desire for absolute safety. As many research on the public perceptions of technological risk, such as the PABE (Public Perceptions of Agricultural Biotechnologies in Europe) project, and STS studies in PUS (Public Understanding Science) shows, this assumption is untenable. It would be better to call the *experts' myth of public fallacy of zero-risk*. While any qualitative investigations on public risk perception as comparable to PABE have not been done in Japan, it can be also said that the notion that the public desire zero risk is an experts' fiction. For example, according to the outcome of the consensus conference on GM Crops held by the Society for Techno-innovation of Agriculture, Forestry and Fisheries (STAFF), entrusted by the Ministry of Agriculture, Forestry and Fisheries (MAFF), the scope of concerns of citizen panel was much wider than experts' one, including many things such as concern for responsibility and liability of government, companies and experts. One of the most

[5] Another identification of democratic decision with political discrimination is also problematic and quite absurd, because the nuclear community has been one of the most politically privileged party in Japanese society since its beginning.

central concerns of the panel was about the 'fallibility' of science, uncontrollability, unpredictability, uncertainty including 'unknown unknown' of nature and technology, and so on. For them, the fact that everything has risk is a matter of course, but they also know human fallibility so seriously that they are more cautious with risks than experts are. This kind of contrast between the public and experts is also confirmed by a quantitative investigation on public risk perception (Kosugi et al, 2000).

Nevertheless, the myth works as rhetoric for persuading people to accept a particular technology in question and its risks by using several *clichés* based on the myth: "Everything has risks", "one should take into consideration benefits of technology as well as its risks", "How safe is safe enough? (HSSE)", "Resource for risk management is finite", "No risks, no benefits", "No adventure, no progress", and so on. For example, we often hear, "Everything has risks. Just as automobiles, airplanes, bridges and whatsoever have a risk of accidents, nuclear power plants do so. Why don't you accept the risk of nuclear power plant while accepting other risks?". Otherwise, more sophisticatedly, experts may say, "There is nothing perfectly safe, and the resources for risk management is finite. So, we must tolerate risks less than a certain degree". While these claims sounds plausible from macroscopic and statistical viewpoint, it is highly oppressive for those who are exposed to much higher risk than average. The partiality of risk distribution across the society is out of sight of such claims. In addition, by saying, "No risks, no benefits", both of risks and benefits are at the same time imposed on people, sometimes justified by a certain ideological view of society. For some experts, acceptance of risk, or their preferred expression, "taking risks," whatever they are, is duty for all members of contemporary society, and consequences should be placed on "personal responsibility". One of them put this neo-liberalist ideology clearly:

> As the society gets more open, and hence more liberal and risky, and as people learn to act independently of government's regulation and controls, everyone has to cope with risks for oneself. Based on the risk perception that equates safety to absolute safety, we can do nothing today, and any actions entailing risks would be impossible. (Hirose, 2000)

The third assumption of the risk discourse is that risk analysis (especially risk-benefit or cost-benefit analysis) is a politically neutral ground for decision-making (Nakanishi, 1995; Mitsuse, 2001). However, it is a commonplace today that assessment of risks as well as benefits itself involves value-judgment. Uncertainty of science is the most vital source of controversy among stakeholders, and risk analysis is always suffering from this predicament. In addition, the framing of risk analysis tends to be much narrower than what ordinary people want to do. As evident in the case of GM controversy, socioeconomic, cultural and political risks are completely dismissed. In the Biosafety Protocol negotiation, it was how to frame the GMOs' risk that was at stake fiercely. Furthermore, so far as the risk analysis assumes to be science that is supposed to be free of politics, it is unlikely to probe into the societal roots of those controversies. In short, the risk analysis tends to work as political device for preserving status

quo of society.

The problem with the notion of risk analysis as a neutral ground is most clear when the risk-benefit analysis is the case. In order for the risk-benefit analysis to be meaningful, those who are exposed to a risk must coincide with those who share a benefit. Regarding this point, Nakanishi (Nakanishi 1995), who are a leading advocator of risk-benefit analysis as neutral tool for overcoming political conflicts, claimed that inequality of distribution of risks and benefits will gradually dissolve. However, the dissolution of inequality would be an outcome of genuinely political efforts, not that of application of risk-benefit analysis. The applicability of risk-benefit analysis is subject to political situation, so that the political efficacy of the analysis is quite limited. Although Nakanishi herself seems to acknowledge this limitation, without this acknowledgement, the risk-benefit analysis would easily be a tool for masking and oppressing

3. Democratic Response ?

In previous section, I focused on the technocratic response to the '90s crisis of science and technology in Japan. In this, I turn to the democratic trend. As mentioned in the introduction, this trend have been not prevalent so far, but it is gradually growing. Here I will take three examples.

The first example is the Round Table on Nuclear Policy, and it is a boundary case between democratization and technocratization. As mentioned above, it was a direct outcome of government's response to the rapid decline of public confidence and support after the Monju sodium leak accident. Three series of conference were held in 1996, 1998 and 1999. The statement "Toward the Formation of National Consensus on Nuclear Policy" (STA & MITI, 1996), in which the Round Table was firstly proposed, characterized it as a place to reflect wider range of opinions from the public and local communities in Nuclear policy and to serve to formation of national consensus with following five principles:

(1) To invite wider range of participants from various corners of society;
(2) Members of the Atomic Energy Commission (AEC) are to attend at every meeting;
(3) To Adopt a dialogue method;
(4) To consider the possibility of meetings held in local areas;
(5) To keep full access to information of the Round Table.

In 1996 series of the conference was operated by 6 moderators including members independent of nuclear community, such as journalists and economist. Total number of invited participants was 127, and at the 8^{th} and 10^{th} meetings, 6 participants elected through the public subscription. Although any critics of nuclear policy were not involved in moderators, critics such as Jinzaburo Takagi, who was originally a prominent nuclear chemistry scientist and then turned to the most influential activist in Japanese anti-nuclear movement, were invited at every meeting. And as promised in the principles, all the meetings were kept open, all the minutes and document materials were published through both online and offline, and the videotapes of the meeting were also open to the public.

The immediate achievements of the Round Table were two statements of AEC in the September and October in 1996, “On the Promotion of Free Access to Information and Public Participation in Policy-making of Nuclear Power” and “For the Future Development of Nuclear Policy”. As for the public participation, the former statement called for introducing public comment procedure into decision-making process of nuclear policy. So far, however, no significant changes in nuclear policy as results from public comments have been found.

List of acronyms used

AEC	Atomic Energy Commission of Japan
ANRE	Agency of Natural Resources and Energy, Japan
CENPR	Committee for the Evaluation of Nuclear Public Relations
FBR	Fast Breeder Reactor
IAEA	International Atomic Energy Agency
IAPSAM	International Association for Probabilistic Safety Assessment and Management
INES	International Nuclear Event Scale
MAFF	Ministry of Agriculture, Fishery and Forestry, Japan
METI	Ministry of Economics, Trade and Industry, Japan
MEXT	Ministry of Education, Culture, Sports, Science and Technology, Japan
MHLW	Ministry of Health, Labor and Welfare, Japan
MITI	Ministry of International Trade and Industry, Japan
NRC	National Research Council, USA
NSC	Nuclear Safety Commission of Japan
STA	Science and Technology Agency of Japan
STAFF	Society for Techno-innovation of Agriculture, Forestry and Fisheries

References

AEC [Atomic Energy Commission of Japan]. 1995. *White Paper on the Nuclear Power 1995* [Genshi-ryoku Hakusho 1995], Printing Bureau, Ministry of Finance, Japan.

AEC. 1996a. “On the Promotion of Free Access to Information and Public Participation in Policy-making of Nuclear Power [Genshi-ryoku ni kansuru Jouho-kokai oyobi Sesakukettei-katei eno Kokuminsanka no Sokushin ni tsuite]”, September 25, 1996.

AEC. 1996b. “For the Future Development of Nuclear Policy [Kongo no Genshi-ryoku Seisaku no Tenkai ni atatte]”, October 11, 1996.

CENPR [Committee for the Evaluation of Nuclear Public]. 2000. *The Report of Committee for the Evaluation of Nuclear Public Relations* [Genshi-ryoku Koho Hyouka Kentou Kai Houkoku], CENPR of the Agency of Natural Resources and Energy, Japan, September 22, 2000.

CNIC [Citizens' Nuclear Information Center]. 2000. *Criticality Accident at Tokai-mura: 1 mg of Uranium that Shattered Japan's Nuclear Myth*, CNIC.

EIT [Research Council for Energy and Information Technology]. 2002. *Public Opinion Poll and International Comparison on Energy and Nuclear Power* [Enerugi – Genshiryoku ni kansuru Seron Chosa to Kokusai Hikaku], EIT.

EA [Environmental Agency, Japan]. 1996. *White Paper on Environment 1996* [Kankyo Hakusho 1996], Printing Bureau, Ministry of Finance, Japan.

Hirose, Hirotasa. 2000. "Risk perception and Acceptable Risks", in *Encyclopedia of Risk Analysis [Risuku-gaku Jiten]* , TBS Britannica, 1268-9.

Kosugi, Motoko, Tomoko Tsuchiya and Taketoshi Taniguchi. 2000. "Why is Risk Communication Hardly Applied in Japan?: Psychological Problem of Scientific Experts", paper to the 5th International Conference on Probabilistic Safety Assessment and Management (PSAM 5), November 27 - December 1, 2000, Osaka International Convention Center, Osaka, Japan.

Latour, Bruno. 1999. *Pandora's Hope: Essay on the Reality of Science Studies*, Havard University Press.

Lewis, Harold. W.. 1991. *Technological Risk*, W.W. Norton; [Japanese edition: *Kagakugijutsuno Risuku*, tr. by Ichiro Miyanaga, Shouwado, 1997.]

Mitsuse, Katsutoshi. 2001. *The 'Risk' of Genetically Modified Foods [Idenshi-kumikae Shokuhin no 'Risuku']*, Nihon Hoso Kyokai Publication.

Nakanishi, Junko. 1995. *Environmental Risk Analysis [Kankyo Risuku-Ron]*, Iwanami Shoten.

NRC [National Research Council]. 1989. *Improving Risk Communication*, National Academy Press.

NSC [Nuclear Safety Commission of Japan]. 1995. *White Paper on the Nuclear Safety 1995* [Genshi-ryoku Anzen Hakusho 1995], Printing Bureau, Ministry of Finance, Japan.

NSC. 1999. *The Report of the Uranium Processing Plant Criticality Accident Investigation Committee*, The Uranium Processing Plant Criticality Accident Investigation Committee of the Nuclear Safety Commission, December 24, 1999.

Ohyama, Kosuke. 2000. "The Round Table on Nuclear Policy as Participatory Policy Analysis (PPA) [PPA toshite-no Genshi-ryoku Seisaku Entaku Kaigi]", in *Policy and System Analysis of Decision Making in Japan (Phase II)(Part I) [Wagakuni no Seisaku Kettei Shisutemu ni kansuru Kenkyu (Dai II ki)(Part I)]*, NIRA Research Report No.19990123, National Institute for Research Advancement (NIRA).

Slovic, Paul. 1987. Perception of Risk. *Science*, **236**, 280-285.

STA [Science and Technology Agency]& MITI [Ministry of International Trade and Industry]. 1996. "Toward the Formation of National Consensus on Nuclear Policy [Genshi-ryoku Seisaku ni kansuru Kokuminteki-goui no Keisei wo mezashite]", March 15, 1996.