Joint Fact Finding: Bridging the Evidence Gaps in Decision Making

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Introduction

The Great East Japan Earthquake and the nuclear power plant accident in Fukushima of March 11, 2011, resulted in increased public distrust of decision makers and expert advisers. Part of the reason for this increased distrust is the confusion caused by the fact that (a) the decision makers did not sufficiently explain the basis of their decision making and (b) various experts expressed different opinions with regard to safety concerns. The objective of this paper is to introduce an "old but new" innovative approach, joint fact-finding (JFF), and explore its usefulness in the context of Japan, particularly after Fukushima. It considers what JFF can offer for decision making and its merits and challenges for institutionalization.

Background

Environment Surrounding Decision Making

The Fukushima event of March 11 highlights the characteristics of the environment surrounding today's decision making. The relationship – cause and effect – between science and society is becoming ever more complex, uncertain, and dynamic. The shorthand term "NaTech" describes

an event like that of March 11, where the effects of technological risk were compounded by a natural disaster. Although the risks from the nuclear plant itself had of course been considered, the compounded impact of the risk of a Tsunami had not. The impact was beyond the scope of what had been envisioned: many factors interacted systematically, not only the health risks but also the environmental, economic, and societal factors. It is very hard to grasp the whole picture and nobody is sure of what the "right" decision(s) might be.

These characteristics of the world we live in – increasing complexity, uncertainty, and dynamism – mean that today's decision maker is in a very difficult position. These increasing characteristics require him/her to catch the "whole mapping of the factors" related to the object of his/her decision making and to consider thoroughly the tradeoffs between the factors and systematic or spillover effects. However, because of the limited time and resources and of public pressure, the politicians are prone to be obsessed with short-term interests and end up with myopic decisions that attract public populism, which in turn damages the regulator's credibility in the long run.

JFF: An Approach to Accountable Evidence

To avoid being bogged down in such a situation, it is indispensable for the decision maker to obtain evidence that is fully "accountable" (i.e., the evidence on which a particular decision is based should be transparent, sourced, and credited). This evidence is composed of various facts that form the basis for decision making. These facts involve both qualitative and quantitative facets and are not only limited to the facts provided/produced by the natural sciences but also include those produced by the social sciences.

JFF is an approach that helps one to obtain such inclusive evidence and to bridge the gaps in the evidence. JFF was originally proposed in the

US and there are many cases of its application to the environment. It is possible to see several examples, as in Ozawa and Susskind (1985), Ehrmann and Stinson (1999), McCreary et al (2001), Andrews (2002), Adler et al (2011), Karl et al (2007), or in Rofougan and Karl (2005). However, there seems to be no single common definition of JFF. In this paper, JFF is used to indicate a collaborative approach or process where JFF provides a forum for (a) co-framing the problem that needs to be addressed and (b) co-producing jointly found facts, including the areas of agreement and disagreement.

The underlying philosophy for seeing the "facts" is different from what we term the "old facts" view, where scientific "facts" are objective, neutral, and unbiased and therefore any disputes can be resolved by seeking the right facts. We consider that "facts" must be enlarged to include various facts, not only scientific ones, but also scientific assumptions and the framing behind the facts presented (and these may become very close to values) as well as other further facts about social, economic, and legal facts (see Figure 2 in Sect. 2.2). It acknowledges that scientific facts should be distinct from values but it also accepts that facts are often not totally free from values. Decision makers should grasp the whole picture of the facts surrounding the issue, which comes back to the concept of acountable evidence.

iJFF and JFF cases and the Development of Guidelines

JFF in Japan

In response to the increasing public distrust in science and policy decision making following Fukushima, there has been a growing interest in JFF in Japan. For example, the Ministry of Economy, Trade and Industry

convened a series of symposia on the geological disposal of high-level radioactive wastes, and one of these symposia was held using the JFF approach (February, 2013). However, this is still a rare case of the utilization of the JFF approach by the ministries. JFF continues to be underappreciated by decision makers, and decision makers are still at the stage of exploring the usefulness of such an approach.

The iJFF (Integrating Joint Fact-Finding into Policy-Making Processes) project is one such effort. It is funded by the Research Institute of Science and Technology for Society (RISTEX) of the Japan Science and Technology Agency (JST), which is affiliated with the Ministry of Education, Culture, Sports, Science and Technology. It is a three-year project (2011–2014). The objectives of the project are to explore the applicability of JFF approaches in the Japanese context by conducting three action research projects (in the fields of food safety, energy policy, and marine spatial planning). It is also aimed at networking with similar fields of practice, such as the technology assessment and risk analysis communities. We disseminated the outcomes of our research to these communities to obtain feedback for consideration. The following sections provide some of the insights obtained from this iJFF project.

The JFF Case of Radionuclides in Food

The iJFF project conducted an experimental JFF dialogue on radionuclides in food. The spread of radionuclides as a result of the accident at Fukushima Dai-ichi nuclear power plant has contaminated food around Fukushima and the neighboring prefectures. The risk of radionuclides in food was one of the sources of public confusion after the earthquake. Since the low risk of radionuclides at low doses is inherently uncertain, experts and consumer groups expressed a variety of opinions in the media, books, and newspapers. There was a clear need for JFF among experts, in the first place to identify the source of their divergent views. The iJFF

food safety group engaged in a "pre-JFF activity" to consider possible sources of disagreement among the experts (literature reviews and interviews etc.) and then held a JFF event at the 26th annual meeting of the Society for Risk Analysis in Japan (November 17, 2013). The JFF session brought together leading experts on risk assessment/management from the food safety community and the radiation community.

The following provides a brief summary of our findings in the food safety group's JFF activities (for more details, refer to Matsuo et al.'s (forthcoming) paper). First, many disciplines are actually interested in the risk posed by radionuclides since the radiation is used in variety of fields (Figure 1). In contrast to the traditional view that science speaks with one voice, each of these disciplines has developed its own way of thinking and had little interaction with the other disciplines. Moreover, until the Fukushima incident, the food safety community had never considered the risk posed by radionuclides seriously, and there was no expert on the risk posed by radionuclides in the food safety community. Although one should not overgeneralize, there are differences in the attitudes of scientists toward radiological risk depending on the discipline. Since there has been less interaction between and among the disciplines, there was no general consensus about the appropriate way to treat uncertainty.

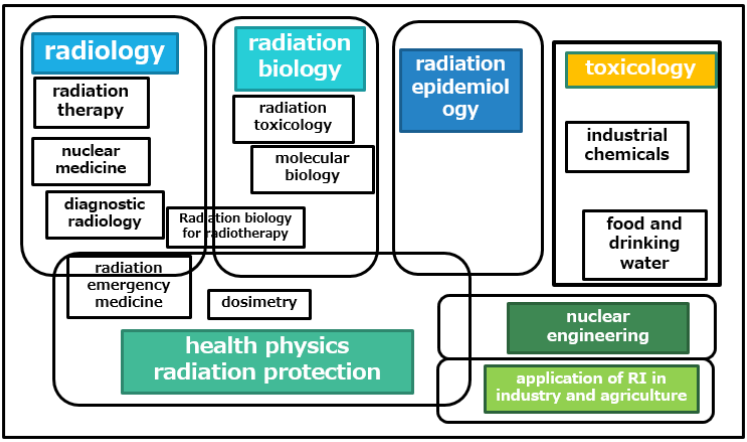

Figure 1: Many disciplines related to the risks posed by radionuclides

Furthermore, there were different approaches towards uncertainty. In fact, at least three ways of handling uncertainty in general terms were identified. The first approach treats uncertainty in risk assessment as equivalent to "virtually safe". This approach considers a risk scenario to be safe unless it is proven to be harmful since the scientific facts (i.e., the scientific data etc.) cannot identify the exact harm. The second approach is the exact opposite to the first approach. It considers uncertainty itself to be virtually harmful since you never know what would happen until proven safe. Taking this position, you would have to endeavor to achieve "zero risk".[57] The third approach is the risk-based approach. The biggest difference from the previous two is that this approach uses scientific assumptions (for example, the linear no threshold or LNT model) in the analysis. The existence of risk is acknowledged

[57] The European Commission deals with this dichotomy by introducing the criteria that the precautionary action that you take should be proportionate to the harm you wish to avoid (European Commission, 2000).

and the focus is on the consideration of what is the virtually safe level or appropriate level of protection.

The unique dimension identified from the JFF exercise was the consideration of other facts besides scientific ones. As mentioned above, the risk posed by radionuclides is a very complex issue. It involves risk trade-off issues not limited to health risks but also including other socioeconomic risks. In addition, there was a difference in management approaches between food risk control and radiological protection in general. The methods of treating the acceptable level of risk were different.

To sum up, the JFF approach reveals the existence of different facts that constitute the evidence for decision making in managing the risk posed by radionuclides in food. The identified facts can largely be categorized into three boxes (See Figure 2); (a) the scientific facts based on conventional or traditional science, (b) the facts based on scientific assumptions, (c) the other facts such as economic, societal, ethical, or legal factors. It should be noted that in the selection of facts for evidence in the final decision making, interaction between the facts is needed.

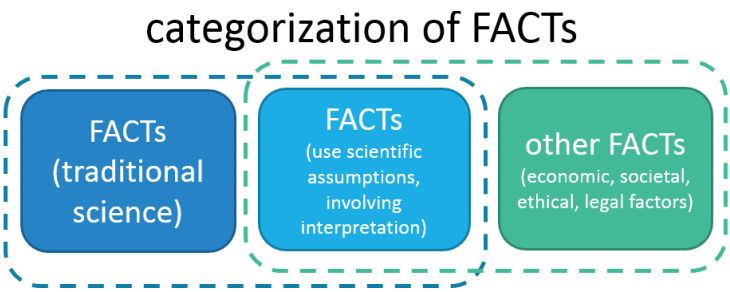

Figure 2: Categorization of facts

Development of a Set of Principles for JFF

In addition to the experimental JFF activities, the iJFF project developed a set of principles for conducting JFF exercises, taking into account the lessons learned from various experiments with JFF in Japan, a literature review, and discussion with a variety of experts at symposia. The principles are listed in Table 1.

Table 1: A set of principles for conducting JFF exercises

(1)	Evidence should be acquired by the parties.
(2)	A common understanding about what constitutes evidence should be explored.
(3)	Evidence should cover comprehensively the varieties of relevant disciplines.
(4)	Beware of the uncertainty (or unavailability) of evidence.
(5)	Be conscious about identifying who the parties are.

Conclusion: The Future of JFF

The Usefulness of JFF

Several lessons have been identified or reconfirmed by our experience in the iJFF program. Firstly, JFF has the potential to transform the decision-making processes, from top-down and linear to a more collaborative approach. We stress the "joint" and "fact" aspects of JFF. By "joint," the scope can be expanded through interaction, since this can bring together actors and their frameworks: not only expert and lay persons, experts and politicians, but also expert and expert (in the same or different disciplines) or experts and politicians and lay persons, for example.

It can change the knowledge flow from "expert as knowledge provider" to "expert and/or other actors as knowledge producers".

Secondly, the proposed categorization of facts resulting from the JFF food experiment is useful in making explicit the acknowledgement of the evidential basis. By explicitly acknowledging the different categories of facts, it encourages decision makers and stakeholders to avoid ignoring the implicit consideration of prioritization or trade-off decisions embedded in different categories of facts.

Lastly, the JFF approach challenges the view that science speaks with one voice. It questions the assumptions of science in policy making and provides an opportunity for reconsidering the conventional way of thinking, which can stimulate a learning process among those involved. All this contributes to promoting the opening up of evidence and thus can provide policy alternatives. By giving explicit reasons for the policy choice on the basis of the identified evidence, it can stimulate more transparent and evidence-based decision making. It enhances the quality, the credibility, and legitimacy of the decision to be taken and should contribute to building trust.

Challenges to an Institutionalization of the JFF Approach

JFF can be used stand-alone or can be embedded in any step of the policy cycle, from agenda setting to implementation and monitoring (Adler et al 2011). The proposed approach can be embedded in the existing institutional arrangements such as the risk analysis frameworks and technology assessment (TA). Since JFF examines various facts

associated with complex science and technology issues, thus helping decision making, it can be considered a variant of TA.[58]

However, in Japan, JFF is yet to be institutionalized in formal policy-making processes. There are two main challenges to the institutionalization of JFF in Japan. One is that our proposed JFF is an approach and not a determined methodology. It is a kind of approach to the issue but does not prescribe detailed steps or criteria to be followed. The design for organizing a JFF event can (and should be) considered in the context of the desired objective. It allows flexibility but might be regarded as less straightforward or understandable for the practitioners.

The second challenge may be an obstacle stemming from the unwillingness on the part of decision makers who mistakenly believe this kind of effort to be "a threat to their authority," as was pointed by Susskind (2008). Decision makers might resist the idea of "opening up" the possible alternatives besides the one they opt for. However, it is important to keep in mind that opening up the discourse to facts can also contribute to closing down some policy options. JFF can make it possible to identify many facts. This inclusiveness helps decision makers to consider what should be prioritized and to narrow down the policy choices. It helps them to explain the reasons for the choices being made. This in turn will contribute to restoring confidence and trust.

[58] However, there are some differences (in a relative sense) in terms of issue scope and time scope. In terms of issue scope, while JFF is more focused and issue or problem oriented, TA assesses the broader impacts of a specific technology. With regard to time scope, JFF puts more emphasis on the analysis of the current situation but TA looks at the “now to future” impact. JFF is similar to participatory TA and constructive TA but starts from the premise that expert advice itself is not “given.”

Note

The main body of this paper is based on the Matsuo et al (forthcoming) Joint Fact-Finding (JFF) of the Risk posed by Radionuclides in Food.

Acknowledgement

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