Chapter 2
A Public Health Perspective on Reconstructing Post-Disaster Japan

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2.1 Introduction

Sometimes, as a result of disasters, it is possible to view things happening underneath the surface in society. This was a key finding of my research on pollution problems when I lived in Japan in the early 1970s. At that time, I co-authored a book on Japan's environmental crisis, with the title of *Island of Dreams* (*Yume no shima*)—as a metaphor for Japan's dream of development and of the environmental disasters that resulted.[1] A similar phenomenon is unfolding now in Japan. Processes that are normally hidden from the public and kept out of public debate are being exposed to light. In this way, disasters can create an opportunity for change.

The Great East Japan Earthquake of 11 March 2011 and its associated disasters (the tsunami and nuclear catastrophes) have thus created an opportunity for reconstructing and reinventing Japan. Of course, this is easy to say and difficult to do, and represents a major challenge for Japan. The triple disasters of earthquake, tsunami, and nuclear accident may represent a major historical turning point for Japan, an end to the post-war era and the beginning of a new historical period. What that period will be and how it will evolve, however, are still being determined and shaped.

[1] Huddle and Reich (1975).

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In this period of potential transition, Japan is in the midst of major reflection on the triple disasters. It is a time for reflection both on how things could have been done better in addressing the catastrophes that occurred, and also how Japan could evolve in the future. In this period of reflection, the public health perspective has a special role, as I suggest in this chapter.

The question of how Japan has performed in responding to the recent disasters is being debated both inside and outside Japan, and many questions are being raised. Teams of international experts have visited Japan, and are reviewing public and private records. New facts are being discovered and revealed to the public, and the stories of what happened are being revised and rewritten, as a result of comprehensive investigations. This process will continue for a long time.

This chapter reflects on the Great East Japan Earthquake through an analysis of three issues, starting with responses, moving then to consequences, and finally considering causes. First, I propose six public health principles for considering responses to the disasters and the reconstruction of Japan. Second, I examine the consequences of the disasters, especially for the victims and their struggle for redress. Third, I explore debates over fundamental causes of the nuclear power disaster. These reflections provide a broader context for other chapters in this book and also contribute to Japan's ongoing deliberations about its recent past and future paths.

2.2 Reflections on Responses

2.2.1 Principle #1: Provide Comprehensive Redress to the Victims

The first principle is that people who have suffered from loss should receive comprehensive redress and their lives should be made whole again. In addition, those who caused the loss should be held responsible. Of course, this is not a simple or easy objective to achieve; in fact, it is very difficult for a complex disaster like the Great East Japan Earthquake. Unfortunately, the lives of the victims cannot be returned to their pre-disaster condition. In this circumstance, what does 'comprehensive redress' mean?

Forty years ago, when I studied the victims of Japan's pollution disasters, I learned that their struggle to obtain redress often lasted for decades. When I later returned to study Japan's disasters from a comparative perspective, I framed the experience of the victims as a 'double victimisation'—they were victimised first by the pollution, and they were then victimised by the social process of seeking redress.[2] In the end, the victims could not return to their original pre-disaster circumstances, and it was impossible for them to achieve 'comprehensive redress'.

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[2] Reich (1991).

Let's hope the same does not happen for the victims of the 3/11 disasters. But it is important to recognise that assistance for them is not just an economic problem; redress cannot simply be turned into providing monetary compensation. There are also health losses, community losses, and emotional and spiritual losses. In that broader sense, 'comprehensive redress' will be very difficult to achieve.

2.2.2 Principle #2: Protect the Health of the Workers

The second principle is to protect the occupational health and safety of the workers doing the clean-up work at the nuclear power plants. They have been exposed to the highest levels of radiation and to the most mental and physical stress. Many of the workers at the Daiichi and Daini Fukushima power plants are local residents who lost family, friends, homes, and neighbourhoods, while working around the clock in the early phase of the disaster to try to bring the nuclear disaster under control.

One worker wrote as follows about the early days of the disaster, in an email that became public in a *Wall Street Journal* blog:

> I myself have had to stay in the disaster management headquarters the entire time ever since the earthquake occurred, and have been fighting alongside my colleagues without any sleep or rest. Personally, my entire hometown, Namie-machi, which is located along the coast, was washed away by the tsunami. My parents were washed away by the tsunami and I still don't know where they are. Normally I would rush to their house as soon as I could. But I can't even enter the area because it is under an evacuation order. The Self-Defense Forces are not conducting a search there. I'm engaged in extremely tough work under this kind of mental condition...I can't take this any more![3]

We have also been shocked by the stories about contract workers at the Fukushima nuclear plant. According to news reports, day labourers were hired in other parts of Japan and brought to Fukushima at high hourly wages and without adequate preparation for the work they were instructed to do.[4] The nuclear power industry in Japan has a history of employing non-regular contract workers for more dangerous jobs.

According to a report of data published by Japan's Nuclear and Industrial Safety Agency in 2009, Fukushima Daiichi had 1,108 regular employees and 9,195 contract labourers.[5] The agency also reported radiation exposure for these two groups as follows:

- 5–10 millisieverts (mSv): 671 contract labourers versus 36 regular employees;
- 10–15 mSv: 220 contract labourers versus 2 regular employees;
- 15–20 mSv: 35 contract labourers and no regular employees.

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[3] Japan Real Time (2011).

[4] Jobin (2011).

[5] Ministry of Economy, Trade and Industry (2010).

On 14 March 2011, Japan's Ministry of Health, Labour and Welfare raised the maximum dose allowable for workers to 250 mSv a year, up from the previous standard of 100 mSv over 5 years (either 20 mSv a year for 5 years or 50 mSv for 2 years), justified on the grounds of a state of emergency.[6]

Protecting the health of workers doing the clean-up at the Fukushima nuclear power plant is critical. What kind of health protection are they receiving? What will be the future costs in terms of illness and perhaps death? Unfortunately, some of the labour unions are caught in a conflict of interest, between the desire to protect their jobs and the desire to protect their health. Some labour unions even asked to increase the allowable limit of radiation exposure, so that they could continue to work.

2.2.3 Principle #3: Build Up Social Capital as the Basis of Community Reconstruction

In 1995, Professor Robert Putnam wrote a classic article called 'Bowling Alone: America's Declining Social Capital'.[7] That article started a social science boom on social capital research. Recently, a number of research studies have been published on the relationship between social capital and disasters, not just in the US, but around the world, including India, Africa, and Japan. Researcher Daniel Aldrich, for example, has examined the role of social capital in the aftermath of Hurricane Katrina in New Orleans (in Louisiana, US). His research has shown the role of 'social capital' in explaining how well different communities perform in recovery from disasters. In other words, developing and protecting social capital is important to rebuilding communities.

Aldrich conducted a comparative study of post-disaster recovery processes in New Orleans (after Hurricane Katrina), in Tamil Nadu, India (after the 2004 tsunami), and in Kobe, Japan (after the 1995 earthquake), and came to this conclusion:[8] 'Communities with more trust, civic engagement, and stronger networks can better bounce back after a crisis than fragmented, isolated ones . . .'. Aldrich showed that social capital can be measured through three proxies:

- The level of trust (in fellow citizens and in government officials);
- The propensity to expend time and energy on civic duties (such as voting in local, regional, and national elections); and
- The ability of citizens to mobilise cooperatively (through demonstrations, neighbourhood clean-up days, and other collective action).

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[6] Ministry of Health, Labour and Welfare (2011).

[7] Putnam (1995).

[8] Aldrich (2010).

According to the cross-national research by Aldrich, social capital helps the recovery process in three ways:

- Social ties can serve as 'informal insurance' that provides people with information, financial help, and physical assistance, especially when formal institutions (both public and private) are not functioning;
- Groups with greater levels of social capital can overcome the barriers to collective action and mobilise more effectively as a group to raise and distribute resources and advance the processes of recovery;
- Social capital increases the likelihood that people will decide to stay in the community and participate in rebuilding, and not exercise their option of 'exit' when confronted with the difficult challenges of recovery (in part because of the availability of 'voice' and collective action).[9]

What are the implications of this research for the Great East Japan Earthquake? Aldrich's research suggests that the Japanese government needs to actively promote the creation and protection of social capital as a way of helping recovery in the communities affected by all three disasters—earthquake, tsunami, and nuclear accident. In other words, the Japanese government needs to give emphasis to social relationships, collective action, and community spirit in its recovery policies. For example, temporary housing may not work for the elderly if it breaks up their informal interactions and cuts them off from one another. Another example, splitting up a community into different evacuation centres may harm the existing social bonds and create obstacles to recovery. All levels of government (national, prefectural, and local) need to find creative ways to strengthen the bonds of social capital that remain after the disasters.

2.2.4 Principle #4: Create Real Preparedness for Real Disasters

Public health generally believes that it is better to prevent problems rather than to treat problems. What does this mean for the victims of disasters? In thinking about prevention policies, it is useful to consider two different categories: disaster prevention (*shinsai bosai*) and crisis management (*kiki kanri*). In the case of the Great East Japan Earthquake, disaster prevention policies were well implemented for the earthquake. Similarly, in the Tohoku region, where there is strong awareness about the dangers of tsunami, good efforts were made at disaster prevention for tsunami. But the situation was different for nuclear disasters, where disaster prevention policies were not effectively developed or implemented.

For the future, Japan needs real preparedness rather than illusory preparedness. This is especially important for nuclear disasters. In short, inadequate protection

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[9] Aldrich (2010).

can create a false sense of security. The Japanese nuclear industry's support for a 'safety myth' (*anzen shinwa*)—the idea that a disaster simply could not occur at a nuclear power plant—created obstacles to the design of effective preparedness and prevention. And when a disaster does occur, the safety myth produces among citizens a profound sense of distrust about the government.

Of course it is not easy to assure a true sense of safety in disaster prevention. There are some difficult questions that must be addressed. For instance, for tsunami, do you prepare for the 100-year tsunami or the 1,000-year tsunami? Who decides, and how? These go beyond technical questions and enter the realm of social values. The process of evaluating and debating social risks and preparing appropriate plans for disasters inevitably confronts issues of transparency. Philosopher Norman Daniels calls this an issue of 'fair process'.[10] One of the problems in Japan has been the walls of silence that exist in the nuclear industry, so that it is hard for social risks to be discussed publicly.

Japan has a special sensitivity about nuclear disasters, because of its experience as the only country that has been attacked by atomic bombs (at Hiroshima and Nagasaki). This experience may have contributed to the 'safety myth' that was believed necessary by Japan's political and economic establishment, during the period of rapid economic growth, to support policies to develop nuclear power plants. As a result, Japan's nuclear power administration was not based on objective scientific evidence and became instead an organisational mechanism for hiding safety problems when they occurred. The safety myth thus became an obstacle in Japan's nuclear energy administration to building effective safety mechanisms for nuclear power in Japan.

What sort of public health approach could contribute to more effective safety management of nuclear power in Japan? How can the public be assured about preparedness for disasters and be convinced that the plans will really help protect people? In the post-disaster period, how can the government manage the many crises that arise and how can the government do this in ways that make people feel safe?

Here I would like to make two recommendations. First, Japan should consider establishing something like the US Centers for Disease Control and Prevention, especially its Epidemic Intelligence Service, which can send out teams to conduct epidemiological investigations for both natural and man-made disasters.[11] Second, Japan should consider an overall framework for comprehensive preparedness for emergencies, similar to the 'all-hazards all-threats emergency plans' approach used by the US Federal Emergency Management Agency.[12]

In short, Japan should improve its disaster management preparation, for all kinds of crises, before those events occur. These preparations should occur at the national level all the way down to prefectures, towns, and villages, on a comprehensive

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[10] Daniels (2008).

[11] See: http://www.cdc.gov/eis/index.html.

[12] US Federal Emergency Management Agency (2010).

basis, including a system for administrative decisions when confronted with complex multiple disasters at a single time.

2.2.5   Principle #5: Make Regulation More Effective

In all countries around the world, public health depends on effective regulation by government of private business in many settings, including food, medicines, highways, construction, and nuclear power. But in order to create an effective regulatory system that can protect people's health and people's lives, the people who regulate must be effectively separated from the people who are regulated. In many countries around the world, however, this separation is inadequate, so that the regulated end up controlling the regulators. This phenomenon is known as 'regulatory capture' in the social science literature.[13]

In Japan, one of the causes of regulatory capture is the problem of *amakudari*, the 'descent from heaven' when government officials retire to jobs in the private sector. Other countries have a similar social phenomenon, even though they use different words.[14] In the US, the phenomenon is called the 'revolving door', where government officials are hired by related private companies and then may even return to government at some time in the future.

For example, in Japan in 2000, a whistleblower reported a cracked steam dryer at the Fukushima Daiichi nuclear power plant. This whistleblower was not Japanese but was a Japanese-American. Despite a law protecting the identity of whistleblowers, the Japanese regulatory agency disclosed his identity to the company and did not send its own investigators to the company.[15]

The lack of effective regulation no doubt contributed to the spread of damage from the Fukushima nuclear power plant during the Great East Japan Earthquake. As the *New York Times* reported, 'Many Japanese and Western experts argue that inconsistent, nonexistent, or unenforced regulations played a role in the accident—especially the low seawalls that failed to protect the plant against the tsunami and the decision to place backup diesel generators that power the reactors' cooling system at ground level, which made them highly susceptible to flooding'.[16] The lack of effective regulation has had many real public health consequences as well as social consequences. It has contributed to undermining public trust in both government and corporations.

This perspective helps to clarify many events from the recent past. For example, under many past governments headed by the Liberal Democratic Party, regulators repeatedly ignored warning signs about risks of disaster at the Fukushima power

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[13] Stigler (1971).

[14] Tabuchi et al. (2011).

[15] Onishi and Belson (2011).

[16] Onishi and Belson (2011).

plant. Today, who believes what the Tokyo Electric Power Company (TEPCO) says? How do you correct the regulatory capture that continues to persist in Japan? Part of this will require structural change in the Japanese bureaucracy, as occurred in the US many years ago—so that the agency responsible for promoting nuclear power is separated from the agency responsible for regulating nuclear power. This could contribute to controlling the practice of *amakudari*, even though it may not be a complete solution to the regulatory problem.

What can public health professionals and others in Japan do in confronting this situation?[17] First, there is a need for more research on the effectiveness of regulation. How is effective regulation defined and measured? Under what kind of organisational structures is it likely to occur? And finally, how can public health professionals use that research to promote more effective regulation in Japan?

Public health departments in Japanese universities have not yet developed courses on 'regulatory science' as it is known in the US. As a result, there is limited awareness of these regulatory issues among health and medical professionals in Japan. Most regulatory specialists are located in the public sector bureaucracy, which creates an obstacle to public deliberation about these issues.

2.2.6   Principle #6: Create a Government that Can Be Trusted

My final public health principle is both the most important and the most difficult to implement. Japan's old Liberal Democratic Party was not able to adequately protect public safety. The Japan Democratic Party, in power during the Great East Japan Earthquake disasters, has confronted similar problems. This may be a problem of politicians, or a problem of political parties, or a problem of Japan's political system. In many areas, there is a need for new leadership, new technology, new vision, and new reforms.

Japan may be entering a new historical period, the '*shin-sai-go*' or the 'post-disaster period'. Where will the political energy come from to address the challenges of this new period? There may be a re-alignment of political parties, and perhaps a new political party may emerge. In that case, what should people concerned with public health hope for? Personally, I would hope for politicians who deeply understand public health.

Radiation creates an invisible, silent, tasteless poison. As a result, radiation creates deep fears among people. People in Japan would like a government that publishes safety information that they can believe and trust. They would like a government they can trust; and public health people have an obligation to help create this kind of system.

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[17] See Nasu (2013), in this volume.

2.3 Reflections on the Consequences

One of the core social challenges after a disaster is to provide redress for the victims, the first of my public health principles above. This was a key finding of a book called *Toxic Politics* that I published 20 years ago on responses to chemical disasters.[18] The book compared the politics of chemical disasters in three countries (Italy, Japan, and the US), and identified three common themes in responses to chemical disasters: around care, compensation, and clean-up. Using these three dimensions, it is possible to assess the performance of policies for responding to a disaster. The overall goal should be to assist the victims of the disaster in achieving redress along these three dimensions.

A major finding of *Toxic Politics* was that these three themes are not just technical problems; they are also political problems and require political struggle to resolve, to help the victims achieve redress. Let me suggest some of the controversies that arise around the three common themes, using examples from the Great East Japan Earthquake.

2.3.1 Care Problems

Many problems related to care arise after a disaster occurs. The first question is who should receive care? Who is affected as a victim, and how is that decided? Second, what kind of care should they receive? Especially, what is the right balance of physical care and mental health care? Both kinds of care are needed, but what degree of each is needed for each individual affected? Third, who provides the care? For example, in 2012 in Fukushima prefecture, the number of physicians had declined by 3.5 % (compared to the pre-disaster situation), making this problem especially difficult. Fourth, who will pay the cost of care for disaster victims? In Fukushima, how much should be provided by Japan's central government and how much by the responsible company?

One example of a controversy over care in Fukushima involves mothers. Mothers have strongly demanded testing of their breastmilk for radiation contamination, especially after trace amounts of radioactive cesium were found in 7 out of 21 breastmilk samples in May and June 2011. The research team that conducted the analysis concluded that the cesium levels were very low, and therefore could be considered as no risk to newborn babies. From a health professional's perspective (obstetricians, midwives, and public health practitioners), the test could be considered unnecessary; indeed, the test could raise uncertainties among mothers and could even reduce mothers' confidence to breastfeed. Nonetheless, after a long

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[18] Reich (1991), pp. 266–281. On milestones in providing redress following the 3/11 disasters in Japan, see further Nottage et al. (2013), in this volume; Rheuben and Nottage (2013).

debate, Fukushima prefecture decided in January 2012 to provide free breastmilk testing to 10,000 mothers, as a response to demands from mothers.[19] But that decision created confusion among some mothers, who viewed the decision to provide the test itself as a sign of the high likelihood of radiation-contaminated breastmilk.[20]

2.3.2   Compensation Problems

Problems also arise related to compensation. One of the first is who should be compensated? Other problems also arise: Which losses are compensated? How much is paid as compensation? Who pays the compensation? What process is used to decide on compensation?

One example of a controversy over compensation in Fukushima involves people who decided to evacuate. Many families outside the government-decided evacuation zone moved south at their own expense and on their own initiative; they then began demanding financial compensation for their evacuation expenses.[21] They were in the region where evacuation was not officially required, but they decided to evacuate on their own volition to reduce their risks, especially for children or for unborn children in pregnant women. On the other hand, there are people who wanted to evacuate but could not. Should the government or TEPCO provide them with financial support? Who draws the lines for compensation, and on what basis are these decisions made?

2.3.3   Clean-Up Problems

A third set of issues relate to clean-up. The first question is where to conduct clean-up activities? Next, how are priorities set to decide on areas designated for clean-up? What constitutes 'clean'? Who sets the guidelines for clean, and how are workers trained in implementing the guidelines? Where are contaminated materials placed for permanent disposal? Who pays for the clean-up?

One year after the disaster, residents in Fukushima were demanding comprehensive clean-up of contaminated areas. One example of confusion over clean-up involved the process for cleaning up schools. According to a *New York Times* report in February 2012,[22] there was deep confusion among workers on various questions related to the clean-up of schools: over the depth of soil to be removed,

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[19] Japan Times (2012).

[20] Goto A, February 2012, Personal Communication.

[21] McNeill (2012).

[22] Tabuchi (2012).

whether buildings should be decontaminated or demolished, and the effectiveness of clean-up methods. The decontamination projects involve huge sums of money going to big companies, but these companies often used sub-contractors or sub-sub-contractors with day labourers of uncertain training to do the actual work. In addition, local residents and volunteers began participating in the school clean-up activities. The methods were described as 'trial and error' with the potential of re-contamination by wind and rain and dust from surrounding areas. In addition, there arose a huge debate over where to temporarily store the removed soil and other radioactive waste.

2.3.4   Conclusions on Redress

It is still early to assess the response to a complex disaster such as the Great East Japan Earthquake. Some of Japan's environmental pollution disasters of 40 years ago (such as Minamata Disease and Kanemi Yusho) created problems in care, compensation, and clean-up that are still being debated today, decades later. Experience from the past unfortunately suggests that these three problems for Fukushima victims will persist for many years to come.

In part these problems will persist because the radiation contamination will persist for decades. But problems will also persist because the health problems will be difficult to detect and will be contested, because questions of compensation will be debated and contested, and because the quality of clean-up will be controversial and contested. In conclusion, these three problems will require both long-term debates and long-term policies—because they are not simply scientific problems; they are also social-political problems and psychological-spiritual problems.

2.4   Reflections on the Causes

Japan is now in the midst of major reflection on the underlying causes of the triple disasters of 3/11, including what needs to be changed to prevent new disasters, and how Japan can evolve in the future. Here I explore the National Diet of Japan's Fukushima Nuclear Accident Independent Investigation Commission Report, which was submitted on 28 June 2012.

2.4.1   The Investigation Report

This report is a remarkable document. It does not mince words, and directly calls a problem a problem. The report also proposes specific actions to prevent the

recurrence of a similar nuclear disaster in Japan. In probing the causes of the disaster, the report raises questions about the nature of Japanese society and political culture. The report thus provides ample material for a serious reflection on Japan's future from the perspective of Fukushima.

The Fukushima Commission Report was based on over 900 hours of hearings and interviews with 1,167 people, including three town meetings with over 400 people who had been evacuated, plus questionnaire responses from over 10,000 residents and from many on-site workers. The report's main text was 641 pages long—a sizeable document. This was Japan's first independent commission of inquiry created by the Diet, through a law passed in October 2011. The Commission, which included ten members with diverse backgrounds and expertise, began its work in December and presented its report in June 2012.

The Commission pursued lofty objectives. It wanted to write a report that would 'contribute to the development of Japan's civil society'.[23] The Commission explicitly sought to write a report for the people of Japan and for the people of the world, and a report 'that meets the highest standard of transparency'. All 19 meetings of the Commission were open to the public and broadcast on the internet, in both Japanese and English. The Commission selected three keywords, in the Japanese report, to describe its mission: national people (*kokumin*), future (*mirai*), and the world (*sekai*).[24]

In considering the problems that caused the nuclear accident at Fukushima, the Commission clearly stated its conclusion: Fukushima was a 'man-made disaster'. But this man-made disaster did not arise, in the report's words, from 'error by a specific individual'.[25] Instead, the disaster arose from systemic problems, with those problems rooted in both structure and culture. According to the report (in the English summary), the causes of the disaster are rooted in problems of 'social structure' and 'organizational, institutional, and legal framework', on the one hand—along with problems of 'organization-driven mindset', 'habit of adherence... to conventional procedures', attitudes of 'ignorance and arrogance', and 'disregard for global trends' and 'disregard for public safety', on the other hand.[26]

I cannot remember any official government report in Japan that uses such harsh words in analysing social problems, corporate action, and government policy. But it is worth noting that similar language has been used in government reports in the US for these same problems with nuclear power (as discussed below).

Based on its analysis of the causes of the Fukushima disaster, the Commission makes seven recommendations for actions by Japan's National Diet:

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[23] National Diet of Japan (English) (2012), p. 9.

[24] Kokkai Jiko Cho (2012), p. 6.

[25] National Diet of Japan (English) (2012), p. 21.

[26] National Diet of Japan (English) (2012), p. 21.

1. Create a permanent committee in the National Diet to monitor the nuclear regulatory agency;
2. Reform the crisis management system for national and local governments and for power plant operators;
3. Strengthen government responsibility for public health and welfare of people affected by the Fukushima nuclear disaster;
4. Reform the rules governing power plant operators, including risk management, governance, and safety, with enhanced National Diet oversight;
5. Create a new regulatory agency for nuclear power, that would be independent, transparent, professional, consolidated, and proactive;
6. Reform existing laws related to nuclear energy to meet global standards, define roles in emergency response, and address problems of old reactors; and
7. Develop a system of independent investigation commissions to deal with remaining problems of nuclear disasters and nuclear energy.[27]

A brief review of these seven proposed reforms suggests that the recommendations could address many of the 'structural' problems presented in the report. The deeper question is whether the recommendations could also address the 'cultural' problems it identified.

The preface to the English translation of the report hinted at this potential limitation. Here is what Commission Chairman Kiyoshi Kurokawa wrote in his 'Message from the Chairman':

> For all the extensive detail it provides, what this report cannot fully convey—especially to a global audience—is the mindset that supported the negligence behind this disaster.
>
> What must be admitted—very painfully—is that this was a disaster 'Made in Japan'. Its fundamental problems are to be found in the ingrained conventions of Japanese culture: our reflexive obedience; our reluctance to question authority; our devotion to 'sticking with the program'; our groupism; and our insularity.[28]

In addition, the preface to the English version cited the 'collective mindset of Japanese bureaucracy', which 'led bureaucrats to put organisational interests ahead of their paramount duty to protect public safety'.

Gerald Curtis, a professor of Japanese politics at Columbia University, wrote in the *Financial Times* that he considered this effort 'to pin the blame on culture' as 'the ultimate cop-out' and 'specious'.[29] In plain language, he views this approach as wrong. Instead of blaming culture, he argued that the Commission should have looked for an individual to blame for Fukushima. 'People matter', he wrote, and someone should be held responsible for the accident. It is unlikely, however, in my view, that the Commission could have found one person responsible for the complex multiple problems that gave rise to Fukushima.

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[27] Kokkai Jiko Cho (2012), pp. 20–22.

[28] National Diet of Japan (English) (2012), p. 9.

[29] Curtis (2012).

2.4.2 Comparison with the Japanese Version

When I compared the English introduction of the report with the Japanese introduction of the report, I was surprised to find several key points missing from the Japanese version. It is fine to write one preface for the English version and foreign consumption, and another preface for the Japanese version and domestic consumption. But the differences that appeared in this case are noteworthy, for they raise broader questions.

First, the Japanese version does not say that this was a disaster 'Made in Japan'.[30] What is the purpose of telling English readers that this was a peculiarly Japanese disaster? If it is so, then which aspects were particularly Japanese? In addition, why raise the flag of Japanese uniqueness to English readers, but not do the same for Japanese readers? More broadly, the report's label of 'Made in Japan' makes it seem like this kind of nuclear accident could only happen in Japan.

One obvious problem with this assertion of Japanese uniqueness is that the two other worst-case nuclear power accidents happened in Three Mile Island and in Chernobyl, one in American capitalism and one in Soviet communism. This raises serious questions about a cultural argument for the root causes of nuclear power plant disasters (and it also raises serious questions about a capitalist versus communist argument about the root causes of nuclear accidents—but that is a separate issue from our main concerns in this chapter).

A second major difference about the two introductions is that the Japanese version does not use the word 'culture' (*bunka*) but instead refers to issues of 'mindset', translated as '*omoikomi*' and followed by '*maindosetto*' written in *katakana* (the Japanese syllabary commonly used for transliteration of foreign language words) in parentheses (マインドセット).[31] The Japanese version also does not include the list of 'ingrained conventions of Japanese culture' that appears in the English version.

The use of the word 'mindset' in *katakana* is an interesting choice. It first suggests a mind that is 'set', not open but closed, and a mind that is resistant to change. But in this case, the Japanese introduction refers to a particular Japanese mindset, related to the postwar beliefs of the all-knowing bureaucracy, single-company worklife dedication, and single-minded elitism that put organisational goals over all other issues including public safety.

As I was reflecting on these differences between the Japanese and English versions, in preparing the first draft of this chapter, I received a call from an old friend, Richard Bell. He co-authored a book 30 years ago on the language of nuclear power, called '*Nukespeak*', which was recently reissued and updated as an e-book.[32] What he told me was stunning. The word 'mindset' appeared as a

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[30] Kokkai Jiko Cho (2012), pp. 5–6.

[31] Kokkai Jiko Cho (2012), p. 6.

[32] Hilgartner et al. (2011).

major theme in the President's Commission on the Accident at Three Mile Island, known as the Kemeny Commission, in 1979. That accident occurred on 28 March 1979, and the report was issued in the following October. When I read that report on the internet, I found a statement that the word 'mindset' appeared repeatedly in testimony before the Commission.[33] What happened, according to the Kemeny Commission report, is that 'the belief that nuclear power plants are sufficiently safe grew into a conviction'.[34] The Commission continued:

> [T]his attitude must be changed to one that says nuclear power is by its very nature potentially dangerous, and, therefore, one must continually question whether the safeguards already in place are sufficient to prevent major accidents.

In addition, the Kemeny Commission wrote that 'the fundamental problems are people-related problems'—not technical problems with equipment—in 'the "system" that manufactures, operates, and regulates nuclear power'.[35] The Commission's overall conclusion (with italics in the original) was that to prevent future accidents like Three Mile Island, '*fundamental changes will be necessary in the organization, procedures, and practices—and above all—in the attitudes*' of both the regulatory agency and the nuclear industry.[36] As the authors of *Nukespeak* commented, 'The "root cause" of the accident at Three Mile Island was the nuclear mindset'.[37]

In their recent edition of *Nukespeak*, the authors included an analysis of what happened at Fukushima. They concluded that the fundamental causes were not the conflict-aversion principles of Japanese culture but rather the accident-aversion assumptions of nuclear culture. In short, the problems were not in the particular Japan mindset but in the universal nuclear mindset.

Where did Japan's Investigation Commission find this idea of 'mindset'? Commission Chairman Kurokawa explains in his personal note in the afterword for the Japanese version (which I read after speaking with my friend) that the idea came from the Three Mile Island Report.[38] The Chairman explains that in his view the root causes of the Fukushima nuclear disaster can probably be found in the version of 'our mindset' that is accepted and supported by Japan's social structure. In this sentence, he subtly transforms the idea of a nuclear mindset (from the US President's Commission Report) into a Japanese mindset (in the Japanese Diet's Commission Report).

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[33] Report of the President's Commission (1979), p. 8.

[34] Report of the President's Commission (1979), p. 9.

[35] Report of the President's Commission (1979), p. 8.

[36] Report of the President's Commission (1979), p. 7.

[37] Hilgartner et al. (2011), p. 144.

[38] Kokkai Jiko Cho (2012), p. 630.

2.4.3   Challenges

This transformation from the universal to the particular raises a number of questions for me. First, let's consider the issue of Japanese culture. I should say that I am somewhat skeptical about the idea that the root causes of the Fukushima nuclear disaster reside in Japanese culture. What is the evidence for this causal claim? The Fukushima Commission Report is not focused on analysis of Japanese culture per se and has little to say on this topic.

But if for a moment we accept these claims about Japanese culture (such as conflict-aversion and groupism and insularity), then what could be done about it? Most of the recommendations proposed in the report do not address mechanisms to change Japanese culture. Let's accept that culture is not static and that it can be changed. Then what could be done? For example, what could educational institutions do to make Japanese people more culturally adept at dealing with the risks of complex technologies? On these points, the Fukushima Commission Report is silent.

Next, let's consider the issue of the nuclear mindset. Viewing the nuclear mindset as a root cause of the Fukushima disaster leads in a different direction. It still allows one to see the nuclear mindset expressed as a social phenomenon in Japan. This mindset will not appear the same way in all countries; it will take different institutional forms and become expressed in different actual events and behaviours. Here the report's evidence and the analysis are more persuasive and abundant. There are many ways in which attitudes about nuclear power in Japan shaped ineffective regulation, inadequate prevention, lax procedures, and sloppy behaviour leading to the Fukushima disaster and the problematic responses.

2.5   Conclusions: What Can Be Done?

So where does that leave Japan today, as it confronts the multiple effects of the Fukushima disaster? In my view, the structural changes proposed by the Fukushima Commission Report are necessary but not sufficient for Japan. They represent the minimal changes required. But they are not enough, because they do not directly address problems that arise from the Japanese version of the nuclear mindset. Structural changes require changes in people's behaviour, knowledge and attitudes if they are to improve the actual performance of a system.

For example, Recommendation 3 calls for a system to deal with long-term public health effects of a nuclear disaster, including the provision of information to residents so that individuals can make informed decisions. But providing information alone does not necessarily improve people's capacity for decision making. For instance, mothers in Fukushima were forced to make individual decisions whether to evacuate or not, with public provision of information. But the limited information they received made decisions difficult. Often mothers made decisions

depending on their personal economic situation and their personal risk perception. These personal differences become apparent in the community, creating social tension and personal anxiety.

Regarding the Japanese context, Japan needs more public guarantees of protection of whistleblowers in all companies and government agencies, more educational support for individual expression and disagreement, and more tolerance for challenges to authority in various institutions. These changes will be difficult. But Japan is now in the midst of various cultural transitions at the start of the twenty-first century, and opportunities for deeper change exist. In addition, to prevent another disaster 'Made in Japan', the Commission Report calls for actions to bring Japan up to 'international standards'—but it does not say who should do this or how. How to shape Japan's cultural future in positive directions, it seems to me, constitutes one of the core challenges posed by the Fukushima nuclear disaster.

For the nuclear mindset, Japan needs more public discussion of the risks of nuclear power, more public reporting on problems that have occurred in the past, and more training to shape the values and attitudes toward risk for people working in both the regulatory agencies and the nuclear industry. These changes will not be easy, but they are probably required for the structural adjustments to produce social change.

Finally Japan needs to confront the loss of social trust that has grown since the disasters of 11 March 2011. This loss of social trust has occurred in part because of problems in how the government communicated with people after the disasters.[39] Addressing the controversies around the three dimensions of redress (care, compensation, and clean-up) will require discussion with the community. Otherwise it may not be possible to rebuild social trust toward government and toward physicians. Indeed, in November 2012, the United Nations Special Envoy on the Right to Health conducted an 11-day survey in Fukushima and concluded that the government had not done enough to protect the health of local residents and workers. He recommended greater community involvement in decision-making, monitoring, and implementation of measures that affect their health.[40]

Rebuilding social trust in Japan will be a key component of efforts to address the challenges of responses, consequences, and causes of the disasters of 3/11, as presented in this chapter. The most difficult decisions related to disasters are rarely based only on scientific evidence but also require social judgements, because of the scientific uncertainties involved and the inevitable role of social values. To restore social trust, Japan will need to improve its ability to collect, analyse, and report *both scientific data and community voices* related to the earthquake, tsunami, and nuclear disasters. This restoration of social trust, in turn, will help Japan move forward in resolving the problems of care, compensation, and clean-up for the victims of the Great East Japan Earthquake disasters.

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[39] Yilmaz (2011).

[40] Associated Press (2012).

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