

## INTRODUCTION

On March 12, 2011, Nomura Atsuko and her husband were glued to the TV, watching the news from the blast at the Fukushima Daiichi Nuclear Power Plant, which had been damaged by the massive earthquake and tsunami that had just taken place. They were 150 miles away from Fukushima, well beyond the area that the government said had to be evacuated. But as they watched the news coverage, Nomura-san (*san* is a Japanese honorific) did not feel particularly safe.

Over the next few months, Nomura-san became increasingly concerned about the effects of radiation. Her lingering fear was confirmed several months later, when her son's urine was tested and found to contain radioactive cesium, albeit a small amount. She blamed herself for believing, for even a second, the government's claims that food in general was not contaminated. The government had been insisting on a state of normalcy and safety, chastising those with radiation concerns as irrational and antiscientific overreactions that were harmful to the national economy. But she resolved to make sure no more radiation would get into her son's body. Wanting to know the actual contamination levels of the food she was cooking, and driven by the desire to protect other children as well as her own, she and her friends established an organization to open a citizen-run station where people could bring their food to have its level of contamination measured.<sup>1</sup> Such groups, which I call citizen radiation-measuring organizations (CRMOS), emerged across Japan after the accident.

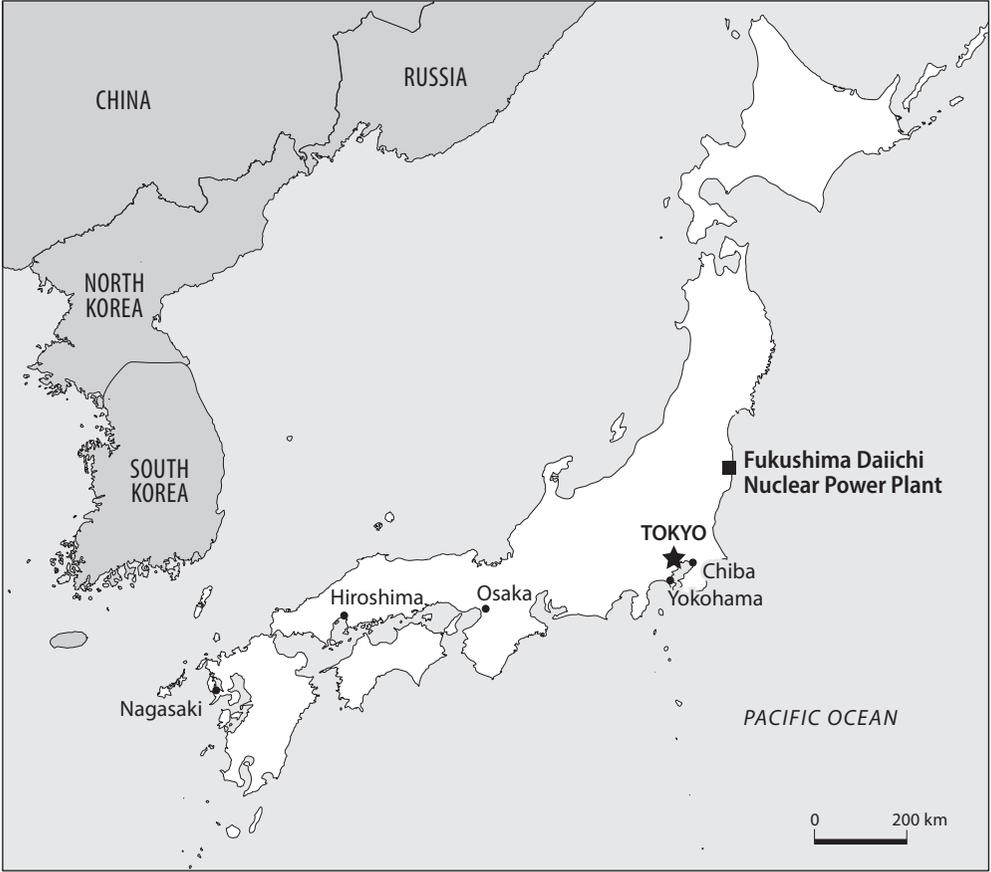
The Fukushima accident was arguably one of the most serious food controversies in Japanese history. The government first admitted a food

safety threat on March 19, a week after the blast at the plant, following the discovery of contaminated vegetables and milk. But the extent of contamination was uncertain, and citizens highly doubted the government's willingness to make it transparent. It was in this context that citizen science, in various forms such as CRMOS, emerged as a central feature of postaccident food politics.<sup>2</sup>

Many saw the spread of CRMOS and other instances of citizen science as a sign of a rejuvenated activism in Japan that might destabilize the power of political and economic elites. Dubbed the nuclear village (*gen-shiryokumura*), the alliance of the utility industry, other business sectors, and technocrats constitutes the core of the Japanese polity. The utility industry's tendrils reach into various facets of the economy and society in Japan (Kainuma 2011). For instance, the manufacturing of reactors and their maintenance is an important business for the heavy equipment industry. Insurance and banking industries are the major stockholders of the utility companies. The utility industry also has a significant PR budget, which ties them to the media industry (Honma 2013). The strong push for nuclear power in Japan has also been entangled with the geopolitical interests of Japan and the United States: Japan must keep its nuclear weapons capacity to maintain a global strategic nuclear balance (Schreurs 2013).

The nuclear accident seemed to open a space to challenge the power of the nuclear village. Many citizen groups formed to measure radiation levels for themselves, contrary to pronouncements of safety. There were also several noteworthy demonstrations that brought tens of thousands of people into the streets. But today, the nuclear village remains largely intact, and it has not been held fully accountable for the accident. For instance, the government installed the new Basic Energy Plan in 2014, which was premised on restarting existing nuclear plants and even left open the possibility of building new ones despite citizens' desire to quickly phase out nuclear energy. As described in a *New York Times* article in 2014: "The country's organized opposition to nuclear power—which erupted in the months after the Fukushima accident into mass street rallies—has failed to materialize" (Tabuchi 2014).

What happened to those citizen scientists who challenged the picture of normalcy? Some scholars observed that citizen scientists actually failed to play a significant role in a larger antinuclear movement, or diverted the momentum away from radical politics. Political scientist



Map I.1 The location of the Fukushima Daiichi nuclear power plant.

Richard Samuels wrote, for instance, that “social mobilization was personified . . . in ‘citizen scientists’ who collected data on radioactivity in their neighborhoods. . . . Japanese citizens seemed *more concerned than outraged* during the first year after the disaster” (2013a, 132, emphasis added).

Samuels’s image of depoliticized citizen scientists captures the jarring experience I had when I visited Nomura-san’s CRMO. I had expected something like an NGO office, but the space felt more like a laboratory, neat and functional, and with a bare minimum of furniture and equipment (a table and chairs, a detector, a refrigerator, a computer, and plastic containers). No activists were coming in and out, nor were there any political flyers or brochures. Although housed in an unlikely place, in the corner of a large game center and separated only by panels from rows of game machines buzzing with mechanical music (they were using the space to save money on rent), the CRMO was remarkable for its atmosphere of extreme simplicity and solitude. Despite her outrage against the authorities for their “lies” and “propaganda,” to use her words, Nomura-san seemed more like a diligent laboratory manager than a political activist—she would come into the office (they tellingly called it “mother’s laboratory”), run the detector, record the results, and go home.

Like the members of Nomura-san’s CRMO, many other citizen scientists also focused more on getting accurate and reliable measurements of contaminants than, say, organizing rallies, protests, or sit-ins. While the literature on citizen science and popular epidemiology has documented many cases of social movement activists skillfully utilizing scientific tools for social change, citizen science after the Fukushima accident seemed to exert taming effects on activism, as the “more concerned than outraged” citizenry apparently took to science instead of politics.

Because food was one of the few tangible ways in which the radiation threats became visible, and its circulation was not limited to the reactor’s immediate vicinity, food could potentially have made an effective rallying point for social movements. Food is also an intimate commodity, which could have been a rich emotional resource for social movements to use to build affective connections among diverse groups of people. But radicalization through food politics did not take place in post-Fukushima Japan.

The understanding of post-Fukushima dynamics would be severely limited if it is simply seen as a case of effective government information control that silenced citizen scientists. My argument in this book is that the constraints for citizen scientists came from much broader forces of neoliberalism, scientism, and postfeminism. These forces reinforced notions of citizenship that largely excluded political activism, rendering activism inappropriate for an ideal citizen.

This book analyzes the complicated relationship between citizen science and politics in post-Fukushima Japan through the concept of food policing, which refers to the censoring of people's concerns about food safety in the name of science, risk analysis, and economy. An obvious example of food policing was the authorities' insistence that there was no health threat from food after the accident and criticism of people like Nomura-san. But the concept of food policing tries to capture the more insidious nature of social dynamics beyond government propaganda and to clarify their linkages to broader shifts in social policy, political economy, and gender relations. Food policing censors safety concerns not merely by public relations campaigns but more fundamentally by reinforcing the notion of the appropriate citizen-subject that is aligned with neoliberalism, postfeminism, and scientism. Good citizens are expected to act in accordance with dominant scientific knowledge and as rational economic beings, and to eat foods despite safety concerns so as not to disturb economic prosperity.

As Michelle Murphy (2012, 2) noted in her seminal book on the relationship between the US feminist movement and scientific practices, the complicated "entanglement" implicates women in the often problematic tendencies of the modern scientific paradigm. Because of the dual stereotypes of women as domestic and irrational, food policing particularly targets women as people who have a strong attachment to food issues and who tend to act out of deficient scientific knowledge. Food policing creates an environment where science emerges as a way to perform an ideal citizen-subject, particularly for women who have to compensate for their perceived weakness in technoscientific matters, while it constrains women from radicalizing, given the cultural dictum that science be value free and apolitical. The good neoliberal citizen-subject is someone who is personally responsible and constructive, and female citizens need to navigate carefully to be resourceful and scientifically

enlightened. Female citizens are also supposed to act appropriately feminine, although such constraints tend to be invisible under the ideology of postfeminism, which presumes that women have already been emancipated and gender stereotypes vanquished.

These central findings of the book have significant implications for social struggles around environmental and food contamination beyond the case of the Fukushima accident. If citizen science becomes a means to perform a neoliberal, technical citizen, its radical political potential is likely to be lost. Contamination cases often involve the call for citizen participation and input, but what if the notion of “citizen” itself has significantly shifted? Redress of injustice from contamination is difficult when citizen mobilizations are constrained by prevailing preferences for neoliberal, postfeminist, and technical-rational identities.

My approach to post-Fukushima food contamination is rooted in science and technology studies’ (STS’) analyses of contemporary environmental pollution and contamination issues. Many scholars in this tradition have underscored the socially embedded ways in which contaminants become visible or invisible and in which they become socially controversial or rendered nonissues. In regard to the question that I posed above about the domestication and lack of social mobilization of citizen scientists, it is possible to argue that it was because contamination turned out to be negligible. This is a highly controversial issue, and this book does not intend to offer a definitive assessment of the extent of food contamination after the nuclear accident or its health impacts.<sup>3</sup> Instead of judging what the true state of contamination was and what the appropriate response should have been, I am more interested in the power relations that shaped dominant understandings of these issues: Who had the power to decide the right way to be concerned, and what shaped the way social institutions and citizens responded to the contamination? These are significant questions, as many contamination cases, including but not limited to radiation contamination, are inherently complex and riddled with scientific uncertainties. If society responds by food policing, it is difficult to have meaningful societal debates on how to respond to contamination and its systemic sources.

This book does not tell a triumphant story of citizen science facing down the authorities’ propaganda to reveal contamination and danger. The story it tells is a fragmented one of food policing that tried to force silence and was cultivated not only by the elites but also by the people.

This is a story as well of how people, particularly women, turned to science to break the silence but were simultaneously constrained in politicizing science. Trying to understand such a messy picture will, I believe, shed light on the constraints on anticontamination activism and citizen science in contemporary societies.

### *Food Policing*

Takeshita-san is a stylish woman in her forties who came to her interview with me on a bike wearing a pair of enamel high heels. She used to be a career-oriented woman, a *bari-kyari* (*bari* comes from *baribari*, which means “aggressively,” and *kyari* for “career”), working in corporate public relations in Tokyo. When the earthquake hit, she was in her office working, where she stayed despite the strong jolts and many aftershocks. She had a son in preschool but figured that he would be safe there, so she worked late that day, and she tried to come to work on the following days.

Soon after the accident, the government started a national advertising campaign to calm growing fears about food contamination and to lessen the impact of what they called *fūhyōhigai* (harmful rumors), as consumer avoidance was reducing sales of food products from the affected area. In this Eat to Support campaign, the government disseminated the message that consumer avoidance caused enormous economic and social damage, and that food sold in the markets was safe. For instance, the government created a TV advertisement featuring TOKIO, a longtime popular singing group of five men. It started with a shot of one of the members eating a big rice ball, followed by the others biting into a whole cucumber, then an apple, a skewer of beef, and a tomato, all smiling happily. The voice-over said, “Today, all of Japan is closely connected through our good food and our pleasure in eating together. *Itadakimasu!* [Bon appétit].” This was followed by the slogan, “Let’s continue to eat to support!” spoken in cheerful unison by the stars. The advertisement ended with an image of the logo for Food Action Nippon, which is a smiling figure with a red dot in the middle, invoking the national flag (see figure I.1). The choice of TOKIO, a group with a large female following, makes it clear that the message was targeted at female Japanese citizens.

In line with the government’s campaign, one of Takeshita-san’s first jobs after the accident was to counter *fūhyōhigai* in a marketing campaign



Figure I.1 A poster by Food Action Nippon. The text says, “Let’s eat to support!” Source: Food Action Nippon, Ministry of Agriculture, Forestry and Fisheries.

for food from the affected area. Her company was going to start a project to bring children to a farm in Chiba Prefecture, which had suffered from declining sales due to its proximity to Fukushima. Takeshita-san had read online that some places in Chiba had been found to be hot spots of cesium contamination. When she was assigned the project, she brought the issue up with her boss. But he scolded her for worrying about it and did nothing to check on the safety of food from the farm. Another project assigned to her was to advertise a restaurant that featured Fukushima food as part of the Eat to Support campaign. Since the restaurant’s clientele was families with children, she could not help

but worry about the possibility of contaminated food. She gathered her courage again to mention the issue to her boss. His reaction was as cold as the previous time, and he told her that she should not be worried about such things when the government said that the food was generally safe. Feeling desperate, she even tried to talk to the higher management of her company. But the director treated her like she was out of her mind; she even cried in the office. And her colleagues did not sympathize with her at all either. She had been working full time for close to twenty years in the industry and had pioneered many projects as a woman. But now she felt isolated and ostracized. She quit her job and decided to join a group of mothers who later established a CRMO in her neighborhood.

One might argue that Takeshita-san was overreacting and that food contamination was well controlled and kept to a minimum. Indeed, the actual additional radiation exposure that each person might receive from food seemed to be contained below the government standards.<sup>4</sup> Setting aside for the moment the debate about whether the government standards were valid or not, and whether the sampling, frequency, and testing method were rigorous enough, the levels of contamination found continued to decrease. The government data showed that only 2.2 percent of rice, 3 percent of vegetables, and 20 percent of seafood tested in 2011 exceeded the government standards. The odds of contamination declined as time passed. In 2013, no tested rice or vegetables exceeded the standards, and only 4 percent of seafood tested did.<sup>5</sup>

This book does not evaluate whether Takeshita-san's response was logical or irrational. Rather, it points out that the way she was ostracized for raising the issue of contamination was reflective of a larger dynamic of food policing that worked to suppress societal debates over the issue. The questions mentioned above, about the uncertainties of the tests, standards, and underlying scientific knowledge, were actually fundamental rather than peripheral to the problem of radiation contamination. Food policing marginalized the need for collective and societal processes to make sense of radiation threats in an atmosphere of such profound uncertainty and complexity.

The concept of food policing takes a cue from the French philosopher Jacques Rancière and the contrast he draws between policing and politics.<sup>6</sup> In his reading, today's democratic societies rarely have real politics despite their nominal embrace of democracy; rather, policing is what

proliferates, naturalizing and reinforcing the given boundaries for institutions and citizens.<sup>7</sup> The way Takeshita-san was chastised for worrying about food contamination illuminates the force of such policing, which creates a society in which what one can sense, discuss, and problematize is already defined by the existing social order. Food policing involves the normalization of a certain level of risk with food as inevitable, imposing a particular view of reality and a prescription for the right kind of conduct. People's worries, concerns, and actions to lower food risk are censored in the name of science, risk analysis, and the economy.

This book examines the Japanese experience to highlight three characteristics of food policing and show why they have power in contemporary society. The first characteristic is food policing's relationship with neoliberalism. Neoliberalism's advocacy of limited government, a free market, and individualism is paradoxically combined with a preoccupation with security and social order (Wacquant 2010). The concern with social order and economic recovery is particularly heightened in times of disaster and catastrophe (Tierney and Bevc 2010). Furthermore, in its quest for harmony and discipline in society, neoliberal policing makes civil society its partner. As Mitchell Dean says of the "liberal police," it "employs techniques and agencies located within civil society rather than merely issuing regulations and thus must rely on a knowledge of economic, social and other processes outside the formal sphere of the state" (2002, 42). The way Takeshita-san was scolded by her colleagues, who she thought were her friends, is a good example of the insidious nature of policing, which works not always from above but sometimes from within civil society. Similarly, it is instructive to note that reactions by average Japanese people to the authorities' Eat to Support campaign and *fūhyōhigai* criticism were more often than not enthusiastic rather than shocked or outraged. Instead of starting a movement to boycott certain products or to mobilize the electorate, many people seemed to be happy to "eat to support," believing the government pronouncement that what was sold in the markets needed to be deemed safe. How Japanese responded to the nuclear accident was not always to engage in politics, but often to take part in policing.

Second, scientism is evident in food policing, with its central tenet that food decisions ought to be based on science and rational risk calculation. Scientism refers to the reliance of regulatory policies on science

at the exclusion of consideration over social-cultural factors and distributional effects (Moore et al. 2011). While scientism's influence varies in different countries (Jasanoff 2005), there has been a general increase in its strength (Moore et al. 2011). The advanced capitalist states are increasingly using science in their regulatory systems, normalizing it as the ultimate arbiter of policy issues (Jasanoff 2005).<sup>8</sup> Such scientization of governance has often resulted in the sidelining of democratic processes and the marginalization of ordinary citizens (Welsh and Wynne 2013). Food policing reflects this dynamic of scientism, which authorizes science to have the final word on food controversies, obfuscating their social and cultural roots and consequences.

Third, food policing is gendered. The demarcation of contamination as an exclusively scientific issue tends to exclude women, who are usually dismissed as weak on scientific issues. As Todd May has said, "there is no police order without the participation of the people, those people who are politically invisible, each in her proper space" (2008, 48); politics and science are not a "proper space" for women, particularly in Japan, where gendered segregation is still pervasive. For instance, in an international comparison of the ratio of women in national parliaments, Japan was 134th (8.1 percent), the lowest among the developed nations, while, for instance, Sweden's ratio is more than 40 percent and that of the United States, 18 percent (Inter-Parliamentary Union 2014). The gender gap is also salient in science in Japan. For instance, only about 25 percent of science and 10 percent of engineering undergraduate degrees are earned by women in Japan (Ministry of Economics, Trade, and Industry 2009).

Furthermore, under the effects of postfeminism and neoliberalism, in what Angela McRobbie (2009) calls the postfeminist gender settlement, women are increasingly considered to be economically mobile players in society but are still required to conform to hegemonic femininity and behave in ways that are nonthreatening to men. This new sexual contract also lets women have power as long as they do not question the main assumption of postfeminism—that structural inequality is no longer a problem. In this gender dynamic, women are allowed to become politically vocal only to a limited degree, while radical activism is policed as incongruent for these aspirational and feminine citizen-subjects.

Of course, the three social forces—scientism, neoliberalism, and postfeminism—are not separate, but mutually constitutive. Neoliberalism's impact on science has been profound; it has reduced public funding for research and increased the need for private resources and the commodification of research through intellectual property protection. Neoliberalism also entails privatization and commodification of biophysical resources, which privileges technocratic methods of their valuation and management. Furthermore, not only is science neoliberalized, but neoliberalism is scientized (Pellizzoni and Ylönen 2012); now ubiquitous, corporate self-governance (instead of government regulation) tends to rely on technical parameters and ignore distributive and cultural issues. Freer trade under neoliberalism is facilitated by the harmonization of standards and regulations, resulting in the proliferation and expansion of the power of transnational technical bodies that set global benchmarks and standards based on technical and scientific frameworks (Moore et al. 2011), as in the case of radiation protection standards.

The entanglements of neoliberalism and scientization are beginning to be theorized in STS, but this book points out another element in this coproduction: postfeminism. Neoliberalism promotes a masculinized, rational, calculating, and risk-taking subjecthood, which in turn facilitates neoliberalization (Ferber and Nelson 2009; Griffin 2007). Neoliberalism benefits from the postfeminist discourse that features have-it-all women as a marker of the enlightenment and meritocracy of the market-based system (McRobbie 2009; Rottenberg 2014). While better-off women are groomed to be entrepreneurial and productive agents in the global economy, less privileged women tend to take the brunt of the impacts of neoliberal cuts in social services.

Scientism and postfeminism are also mutually constitutive. Western science has historically developed in a way that privileges male perspectives and experiences, and the increasing power of science has tended to exacerbate male power in academia, medicine, and bureaucracy. Yet scientism often works to fortify the notion that policy debates are gender neutral and simply technical, while portraying the historic exclusion of women as no longer relevant. Scientism also implies a value-free meritocracy in line with the postfeminist idea that we already live in a meritocratic world free of stereotypes and discrimination.

Nowhere but in the idea of the citizen, implicit in food policing, are the combined influences of these dynamics more salient. A proper citizen-

subject is increasingly understood to be a rational, aspirational, and appropriately gendered one who would understand contamination primarily as scientific risk issue to be handled without disturbing existing social, economic, and gender orders.

To be sure, food is only one of the many contamination issues that became highly policed in post-Fukushima Japan. For instance, information disclosure on airborne radiation was insufficient, leading many local groups to collect and share test data (Morita, Blok, and Kimura 2013); contaminated debris—which accumulated partly from the decontamination work—had to be disposed of or stored somewhere, triggering similar safety questions and severe sanctions against the opposition (see, for instance, “Garekishorihantainiwa ‘Damare’” 2011); and the lifting of evacuation orders by the government, which urged residents to return to their homes in contaminated areas, also drew criticisms and counter-criticisms (“Fukushimagenpatsujiko” 2015; Shirabe 2013). This book focuses on food policing, however, as food is increasingly a focal point for social mobilization around the world (Alkon and Agyeman 2011; Allen 2007; Gottlieb and Joshi 2010; Windfuhr and Jonsén 2005). Food is a powerful lens through which to examine broader social injustices, economic stratification, and environmental sustainability, and the concept of food policing enables focused analyses of the constraints on citizens’ ability to engage in these issues.

The empirical material in the book is limited to case studies in Japan after the Fukushima accident, but my hope is that the book’s theoretical and conceptual insights can be extended beyond them to understand broader dynamics surrounding contamination, citizen science, and food politics. Reinforced by and in turn reinforcing neoliberalism’s prioritization of economic growth and its emphasis on personal responsibility and prevailing scientism, food policing is a chronic feature of food safety controversies in advanced capitalist societies. Social controversies around genetically modified organisms and bovine spongiform encephalopathy (mad cow disease) have involved similar patterns of safety concerns being condemned and ridiculed as antiscience, harmful to the economy, and costing jobs.

Many cases of food contamination are riddled with profound uncertainty. But if food policing is allowed to dominate the societal response to it, little space remains for contradictory scientific views, opinions, and values to be expressed to form a basis for figuring out social

and political, not necessarily scientific, solutions to the situation. It is because food policing results in the annihilation of dissensus that it is not ultimately helpful in rehabilitating food systems after contamination scandals.

### *Citizen Science and Its Politics*

Would citizen science be a way to counter food policing? Olga Kuchinskaya (2014), in her book on the Chernobyl accident, discussed how the government and international and domestic scientists were implicated in the production of the invisibility of radiation, and wondered how a robust civil society in the case of Fukushima might make it easier to make radiation visible. From this perspective, the difference between Chernobyl and Fukushima was that the former happened in an authoritarian state and the latter in a free and democratic society. In such a milieu, citizen science can be expected to create a subversive infrastructure for making radiation visible, laying the foundation for social action. In fact, after the Fukushima accident, there were many grassroots activities that could be understood as citizen science. Many people started measuring contaminants in the air and sharing the results online (Morita, Blok, and Kimura 2013), as well as establishing CRMOS to help citizens screen their own food.

However, the political potential of citizen science is contingent upon complex social and historical dynamics, and varying sets of constraints as well as enablers exist even in the case of a liberal democratic society. Whether citizen science results in radical criticism of the powerful institutions and hegemonic discourses requires in-depth empirical analyses. Among Japanese studies scholars, different evaluations of post-Fukushima citizen scientists have emerged. On the one hand, observers like sociologist Daniel Aldrich, who studies Japanese politics, took citizen scientists as an example of a “renaissance in civil society” (2013, 264). On the other hand, as mentioned earlier, Richard Samuels suggested that citizen scientists like those in the CRMOS exemplify a domesticated civil society that failed to achieve substantial political changes. Japanese citizens expended a great deal of energy in testing food and air for cesium concentrations, but that kind of citizen science activity diverted them from real politics.

In the STS debate on citizen science, too, its political potential is increasingly under scrutiny. From impacts of pesticides (Kleinman and

Suryanarayanan 2012) to genetically modified foods (Kinchy 2012), citizen groups and laypeople are doing their own research to fill gaps in knowledge on food safety and quality, and there are many reasons why they are valuable as important contributors to society. Citizen scientists might possess local knowledge that experts might not have access to (Corburn 2005). Science activity by lay people is also seen as a way to enhance the science literacy of the public, improving their understanding of science. Citizen science might also expose values and hidden assumptions naturalized in official science (Epstein 1998). By doing so, it can also open new lines of inquiry and set new agendas that might not emerge if science is left to experts (Hess 2007). Some also see an inherent virtue in citizen science in that it embodies participatory and democratic orientations, critical in a democratic society (Fischer 2000; Irwin 1995).

However, while we can celebrate citizen science as an instance of the democratization of science, it is nonetheless important to analyze it in relation to a larger political context of neoliberalization. In the United States, for instance, scholars have noticed that the increase in citizen environmental monitoring has occurred in tandem with neoliberalization. Because of government budget cuts, particularly in what is often seen as unproductive areas such as environmental protection, environmental monitoring is increasingly relegated to nonprofit community groups. Therefore, what political geographer Rebecca Lave (2012) calls “extramural” science is now a common feature of governance in the age of neoliberalism.

Neoliberalism’s impact is also evident in who counts as a citizen in citizen science. Neoliberalism comes with a particular normative understanding of the citizen-subject (Ong 2006). Its celebration of market principles and economic efficiency naturalizes the assumption of *homo economicus*, a rational and rent-seeking human being. It is also linked to what Burchell (1996), following Foucault’s work on governmentality, called responsabilization, in which one is interested in and held responsible for the care of oneself. This discourse produces a particular kind of subjectivity that emphasizes self-regulation and self-care. Therefore, citizen science can be seen as a part of responsabilization—putting pressure on citizens to take responsibility for their own well-being and hence driving them to collect data that are necessary for their health and safety.

Neoliberal citizens are also expected to contribute to societal well-being by their engagement with civil society. It is intriguing to notice

that there is intrinsic tension between neoliberalism and the concept of the citizen that is articulated by classical political theories. The neoliberal model of *homo economicus* presupposes the individualism of self-interested humans acting autonomously on rational calculations, while in the classical ideal, citizens engage in dialogue, cooperation, and the collective pursuit of the good life. The tension is resolved in the concept of civil society, which, perhaps predictably, has become popular since the 1980s, when neoliberalism was starting to flex its muscles in the advanced capitalist countries. The civil society as a discourse suggested that if neoliberalism molded people to be self-interested, aggressive profit maximizers and resulted in the rending of the social fabric, the remedy was to be found in civil society, which could patch it back together and function as a “flanking, compensatory mechanism for the inadequacies of the market mechanism” (Jessop 2002, 455). Therefore, some scholars interpreted the proliferation of NGOs not as the strengthening of democracy but as a telltale sign of neoliberalism: the “relinquish[ing] by the state of the obligations to provide citizenship rights” (Yudis 1995, cited in Fischer 2008, 7). Neoliberal citizens are then to take part not only in the market, but also in civil society, providing services to fellow citizens that help to maintain social cohesion, harmony, and control.

It is also important to notice how the work of civil society is often coded as feminine. Women are considered to be engaged in nurturing and caring activities in addition to productive economic activities. This feminine marking is somewhat counterintuitive from the point of view of the historical development of citizenship, which was restricted to men in many societies. But neoliberalism codes economic activity as masculine, as Penny Griffin pointed out: “By presenting the ‘definitively human’ activity of economic production as a characteristically masculine activity, neo-liberal discourse consigns both non-men and non-masculine persons to the spheres of non-productive or reproductive labor, where they are thus situated outside the society of male producers” (2007, 233). Because neoliberal discourse designates the “productive” sphere a male sphere, nonproductive citizen activities are read as appropriate to the female. In the Japanese context too, women have been historically active in nonremunerative charity and social welfare projects such as parent-teacher associations (Mackie 2003).

This literature leaves important questions unanswered: To what extent does citizen science go beyond individualistic acts of self-care or projects

of domesticated civil society? What kind of citizen is implied in citizen science in a specific historical context? How does the gendered nature of civil society influence the politicization of citizen science? Because of science's cultural separation from politics, citizen science might be an ideal civil society activity under neoliberalism: a way to perform being constructive and helpful citizen-subjects who resourcefully take care of themselves.<sup>9</sup>

### *Gendered Constraints on Contamination Activism*

Women are often at the forefront of environmental and health-related struggles in communities. Food in particular is historically considered women's domain in many societies; women are usually more concerned about its quality and safety, and they tend to join related social movements. The aftermath of the Fukushima accident saw a similar pattern, where many more women were concerned about food contamination than men, and many women took the lead in doing citizen science, including CRMOS.

Constraints on women's activism against contamination are complex and multifaceted, but this book examines three of them in particular to elucidate the historically specific and gendered dynamics of policing. The first is the stereotype of women as weak on technoscientific matters and more emotional than rational. Such stereotypes and the scientized view of contamination problems tend to compel women to resort to science in demanding decontamination and the rehabilitation of contaminated systems. But at the same time, in order to count as legitimate science, its boundary with politics needs to be carefully maintained, exerting a strong taming effect on female citizen scientists.

The second is the postfeminist gender settlement, a "new sexual contract" theorized by Angela McRobbie (2009, 54), that nominally grants women equal status with men while keeping the assumption of postfeminism—that systemic oppression of women is gone and that activism is no longer necessary. The trade-off is that the settlement gives women an entry to the public sphere, but only on the condition of complacency with the existing power structure and of adherence to hegemonic femininity. Under this settlement, then, women can address contamination issues only insofar as they act as proper women (such as mothers and docile, feminine citizens). Furthermore, because the idea of postfeminism assumes the existence of a meritocracy without gender biases, women's

empowerment becomes the responsibility of individual women. This incentivizes women to play the game deftly rather than question the rules of the game, seemingly aligning women's interests with those in power. Criticisms of the power structure of society at a systemic level become extremely difficult.

The third constraint on women's activism is the increase in care demands under neoliberalism. Care work—bearing children and taking care of them, and caring for the sick, the disabled, and the elderly—is heavily feminized (Glenn 2000). Neoliberalism's cuts in social spending privatize the social work of care to the market (where it is also heavily feminized) or to female members of families and communities. The well-to-do might be able to purchase care services on the market, but most women have to personally shoulder the increasing care demands. The gendered, racialized, and classed decomposition of labor rights under neoliberalism also means that women are often at the bottom of the workforce, forcing them to patch together different wage-earning or informal activities for survival. As Rebecca Dolhinow (2014) observed about Mexican women's activism, the double and triple demands of being a wife/mother, worker, and activist can easily be overwhelming, with the last often dropping out of the equation. Similarly, contamination issues are likely to be only one among many of the problems that face these women who have to juggle multiple responsibilities for personal, family, and community survival. Sacrificing other care needs for activism might not be practical for many women in such environments.

On the other hand, the same forces of neoliberalism, scientism, and postfeminism make it alluring for women to be complacent about contamination issues. Risk is the increasingly dominant approach to hazards and contamination cases in contemporary society, often propelled by scientism and further cemented by the neoliberal ethos of rational management. While women are said to be more risk averse and ill equipped to have a rational risk paradigm, a new set of global, economic, and social circumstances are making new demands on women to have a more positive relationship with risk. Under neoliberalism, the idea of risk is increasingly understood as a potential economic value; risk is something that economically astute actors can leverage for future return. Furthermore, as anthropologist Megan Moodie (2013) observed, this understanding of risk marks people who take risk (risk takers) as agentic subjects with courage and leadership. This understanding

of risk as value/agency allures women to be active not as radical activists against risk, but rather as risk takers who deal with contamination as scientific and economized risk.

In summary, complex layers of constraints on women may hinder them from mobilizing against and challenging environmental contamination, particularly under the neoliberal and postfeminist ideologies that subject women to limiting and disabling notions of citizen-subjecthood. Women are also required to act in line with hegemonic femininity to count as legitimate and appropriate citizens. Additionally, neoliberal cuts in social spending and public programs increase the care demands on women who have to juggle many responsibilities to ensure the survival and wellness of their family and community members, reducing the time, energy, and resources available for radical activism. Furthermore, gendered policing increases the pressure for women to resort to science, but as a project detached from politics. Combined, then, scientism, postfeminism, and neoliberalism cajole women toward demobilization and depoliticization.

### *Contamination Politics in Japan*

Japan has often been celebrated as a showcase of ecological modernization, with its avowed pursuit of stringent environmental regulations and an efficient and sustainable economy.<sup>10</sup> The most notorious pollution cases, such as Minamata mercury poisoning, itai-itai disease caused by cadmium, and Yokkaichi asthma, are usually seen as relics of the past, an unfortunate byproduct of the rapid industrialization that occurred after World War II.<sup>11</sup> Contemporary Japan has been considered an exemplary green nation, with rigorous regulations and smart industries (Barrett 2005).<sup>12</sup> Nuclear energy fits uneasily into this discourse of ecological modernization. As in the United States, nuclear energy has increasingly been promoted in Japan as a climate-friendly energy source that is more sustainable than coal and oil.

Japanese have been long wary of nuclear power not only because of its association with the atomic bombs of World War II but also due to international and domestic accidents.<sup>13</sup> Different types of antinuclear groups existed before the Fukushima accident, from the Socialist and Communist parties and labor unions to housewives in urban areas (Cavasin 2008). Many local communities have risen up to oppose nuclear power plants in their neighborhoods as well (Aldrich and Dusinberre 2011).

Overall, however, the antinuclear movement has had little success in opposing nuclear power.

Various reasons for this failure can be suggested. Japanese environmental organizations tend to have much smaller resource bases and to be less professionalized than Western environmental organizations. The movement has also suffered from internal fractures within organizations, particularly in the Socialist and Communist parties. Local opposition to nuclear power plants has tended to be suppressed by the political and economic muscle of the utility industry and the government, which injects large subsidies to appeal to economically deprived host communities. More broadly, nuclear power embodies environmental injustice, where the benefits of power accrue to the private sector and urban populations while the cost is disproportionately borne by impoverished host communities and marginalized workers who actually expose themselves to radiation even in nonaccident situations (Aldrich 2010; Hasegawa 1995; Kainuma 2011).

This book suggests the increasingly important role of science and women in both citizen mobilization and countermobilization by the authorities. The scientization of activism and its implications has not been analyzed in depth in the Japanese studies literature. In Japan's antinuclear movement, citizen science has played an important role, but its interpretation is usually different from the usual STS definition. The phrase "citizen scientist" (*shiminkagakusha*) in the Japanese context usually has meant scientists outside the elite establishment who work with laypeople. Some of these scientists have played an important role in the antinuclear movement, including those who established the Citizens' Nuclear Information Center and the People's Research Institute on Energy and Environment (Cavasin 2008, 67). This book focuses on the role of a different kind of Japanese citizen scientist, regular citizens without scientific qualifications who rose up to question the picture of normalcy and safety imposed by the authorities, and asks what it means that many resorted to science as a form of political challenge.

This book also analyzes women's role in contamination politics, particularly in relation to the changing gender order in contemporary Japan. Historically, many women have been active in antipollution cases and in the antinuclear movement. Food-related scandals have also brought many women into public debates, driven by the perceived affinity between women and food preparation and feeding (Kimura 2011). Existing

literature has addressed some of the complex ways in which traditional gender stereotypes have both constrained and enabled women's activism. This book argues that the contemporary hypervisibility of women is a similarly double-edged sword, a problematic product of postfeminism and neoliberalism. Paraded as icons of economic mobility and social progressiveness, women are required to perform being a particular kind of citizen who is docile, feminine, and future oriented. This book examines women's roles, both as citizen scientists but also as risk communicators who work with the nuclear village to disseminate what is constructed as the scientifically correct view of radiation threats.

### *The Postfeminist Gender Settlement in Japan*

Postfeminism is not a coherent ideology or a social movement but a term used to describe an increasingly widespread discourse that suggests the irrelevance of feminism under the assumption that gender equality is already achieved. Feminist scholars have understood postfeminism as part of a backlash against feminist mobilizations, given the tenacity of sexism despite formal codification of gender equality. The notion of postfeminism might seem even more incongruent with the situation in Japan, which in terms of gender equality seems to be farther behind the United States. For instance, the World Economic Forum's (2014) gender equality ranking put Japan at 104th out of 142 countries (while the United States was twentieth). Women's literacy rates and health outcomes are excellent in Japan, but other indicators—such as political and economic participation—tend to be among the worst in developed countries.

Japanese feminism has a long and varied history with diverse groups focusing on different issues, including legal codification of gender equality, educational reform, and solidarity with women in other Asian countries, particularly on the issue of sexual violence and militarized prostitution during World War II. Perhaps the most visible and institutionalized successes were in the 1980s and 1990s, including the ratification of the Convention on the Elimination of All Forms of Discrimination against Women and the establishment of the Equal Employment Opportunity Law in 1985, the establishment of the Office of Gender Equality in 1994, and the adoption of the Basic Law for a Gender-Equal Society in 1999 (Kobayashi 2004).

These policy advances triggered a backlash. One notable example was the controversy around the concept of *jendā furi* (gender free), which was used to denote gender equality in many policy programs, but was subsequently misrepresented by conservatives as an extremist concept that denied sex differences and facilitated radical sex education (Wakakuwa and Fujimura-Fanselow 2011; Yamaguchi 2014). There have also been efforts to reassert the centrality of the so-called traditional family, such as the establishment of the National Movement to Restore Family and Community Links in Support of Child Rearing in 2006 by Prime Minister Koizumi Junichiro and the Council for Japan Supporting Children and Families by Prime Minister Abe Shinzo (Wakakuwa and Fujimura-Fanselow 2011). Such backlash exists side by side with seemingly pro-women policies. The jarring picture was crystallized in Prime Minister Abe Shinzo's declaration in 2013 that he aimed to create a "society in which women shine," which he dubbed "womenomics" (Cabinet Office 2013c).

Coming from a politician who has long taken antifeminist positions (Wakakuwa and Fujimura-Fanselow 2011, 346), Abe's womenomics is a paradigmatic example of the postfeminist gender settlement. Calls for better work-life balance and expansion of maternity leave and child care support seem at first glance like women-friendly policies, and certainly many women would be glad to have them. Yet it is important to notice how womenomics reflects neoliberal economic pressure. Neoliberalization in Japan, as in other cases, is a complex process that is not without tensions and is quite malleable (Ong 2006). Particularly in the agricultural sector, the Japanese government has been critiqued for protectionist policies and the lack of willingness to introduce market-based reforms. The degree to which free market, free trade principles have changed policies is quite mixed. Nonetheless, after the late 1980s, the Japanese government felt the need to radically restructure the postbubble economy and undertook various neoliberal reforms including administrative reforms, welfare spending cuts, and privatization of railways and telecommunications. International pressure—particularly from the United States—also mounted to open up key markets such as financial and agricultural industries (Tiberghien 2014). The long-ruling Liberal Democratic Party (LDP)—which has been in power since 1955 with only sporadic interruptions—shifted toward favoring neoliberal policies despite resistance from its traditional constituents. The Koizumi administration (2001–2006) accelerated neoliberal reform to an unprecedented degree.

The Democratic Party, which took power between 2009 and 2011, was more critical of neoliberalism, but the LDP regained power in 2012 under Abe (Tiberghien 2014). Womenomics was part of his Abenomics, an aggressive economic platform for the revival of Japan. As Abe explained, the rationale behind womenomics was “the more the advance of women in society is promoted, the higher the growth rate becomes” (Cabinet Office 2013c).

Gestures toward women by conservative politicians like Abe have been driven in part by the realization that alienating women could be suicidal in elections (Kunihiro 2011, 370). But the neoliberal courting of women as a workforce—and a female workforce is still cheaper and more flexible as a reserve—also factored in the celebration of female power. Feminist scholars have pointed out that the Japanese government’s push for a gender equality program has been motivated by the need to increase the labor force in the context of low fertility rates and the rapid aging of society (Yamaguchi 2014). It is pronatalist and neoliberal needs that motivated the conservative call for a greater role for women.

Neoliberalism seems to share the sensibility of liberal feminism in its emphasis on individuals as opposed to family as the smallest social unit. Given the confines of the traditional family, *ie*, which is often described as the entrapment of women, the individualist rhetoric of neoliberalism can sound feminist and might be seductive to many Japanese women (Alexy 2011). However, the concept of the postfeminist gender settlement reminds us that while the leash might be loosened it will not be released; women must be careful not to transgress too much, as hegemonic femininity and the heterosexual nuclear family remain linchpins of the conservative imagination of Japanese nationhood.

### *Structure of the Book*

The book is divided into two broad sections. Chapters 1 and 2 examine the dynamics of the food policing that unfolded after the Fukushima nuclear reactor accident, while chapters 3, 4, and 5 examine potential challenges to food policing by regular citizens, particularly women.

Chapter 1 analyzes food policing through the discourse of *fūhyōhigai* and its gendered mechanisms. Originally designed to help food producers gain compensation for reduced sales due to the fear of contamination, the concept had a wider influence, often equating consumer worries with

irrational fearmongering. As evident in the post-Fukushima neologism “radiation brain mom,” the implicit target of the *fūhyōhigai* policing was women, understood as having an irrational “radiation brain,” being anti-science, and overreacting. With its strong shaming effects, such food policing made many women’s struggles with contamination a private problem that had to be dealt with in a highly secretive manner. Ironically, helping hands came from disaster capitalism, which offered products and services catering to the unmet needs of concerned consumers, but those who were not able to afford them were left out of this world of commodified safety. The neoliberal privatization of struggles with contamination under food policing raises the issue of class stratification.

Scientism in neoliberalism has made risk the primary frame for contamination issues, and chapter 2 examines gendered demands on citizens to take risks and communicate risks to fellow citizens. Specifically, the chapter examines risk communication as a facet of food policing by looking at how the Japanese government, the nuclear industry, and international nuclear organizations engaged in a public relations campaign in the name of scientific risk communication. The chapter suggests that an important modality of food policing is increasingly community based and feminized. Departing from the traditional expert-led model, risk communication today takes a participatory approach and frequently makes women the messengers as well as the targets. The “correct” kind of understanding of radiation was cultivated from the ground up and in a seemingly democratic manner, implicating women as important partners in this policing process.

Chapters 3, 4, and 5 examine how people responded to food policing, not through the market as in chapter 1, but by collective actions, particularly using science as a tool, and how they are shaped by postfeminism and neoliberalism. Chapter 3 examines the case of the safe school lunch movement (which was highly feminized), which demanded the government ensure the safety of the public school lunch program after the Fukushima accident. Food policing and the charge of *fūhyōhigai* made it difficult for women in the movement to speak up against the government position that no special measures were necessary in school lunch programs. This chapter describes three strategies that the women activists in the safe school lunch movement used, emphasizing science, motherhood, and hegemonic femininity. Women activists in the movement framed their demands around good science and testing, and also tried to

authenticate their voices by emphasizing their identities as mothers and drawing on still-strong images of hegemonic femininity. Situating these three strategies in the context of neoliberalism, scientism, and the post-feminist gender settlement, I explore the extent to which the strategies were enabling as well as disabling of women's activism.

Chapters 4 and 5 discuss another instance of citizen science, the CRMOS. Chapter 4 gives a profile of CRMOS in Japan, describing their origin, structure, membership, and testing achievements. The chapter's emphasis is on CRMOS' political potential, however, and it asks whether CRMOS constituted activities of neoliberal citizens, or was part of an emergent food politics contra policing. The answer to the question of who can be a citizen in citizen science in contemporary Japan seems to be "not many people." In addition to neoliberal and postfeminist constraints on the idea of proper citizenship, post-Fukushima Japan saw a surge in radical left groups that made CRMOS highly wary of potential hijacking and the stigma of being associated with them. The space of the legitimate citizen became smaller and smaller, compelling many people to use science as a means to distance themselves from politics. But this does not mean that citizen science was completely depoliticized. With the concept of measuring on the margin, I argue that CRMOS sought to do politics by science, albeit in a highly constrained manner.

Chapter 5 continues to analyze CRMOS and asks questions regarding their precariousness. Three years after the accident, many of them were struggling to remain open and some had already closed down. Food policing must be understood as part of a larger landscape of neoliberalization and simultaneous erosion of citizenship entitlements and economic volatility. I identify the gendered care burden under neoliberalism as one of the reasons for the challenges facing many CRMOS. In addition, the chapter examines the temporality of contaminants constructed under neoliberalism and how forward-looking, aspirational neoliberal governmentality made a particular temporal understanding of radioactive materials salient.

Overall, the book critically examines the role of food policing in social responses to contamination and technoscientific disaster, as well as citizen mobilization in countering it. I situate the interplay between contamination and social responses at the intersection of scientism, neoliberalism, and postfeminism. The examination of food politics after the Fukushima accident helps us discern the dynamics where these forces are making new demands on women as scientifically rational, resourceful,

and aspirational citizens. When contamination is turned into risk under scientism, and risk into the signs of agency and value under neoliberalism, the allure for citizens to condone it is formidable, particularly for women who are now endowed with nominal equality to realize their economic potential. Women are to take up technoscience as well as its underlying scientific rationality, and to engage with risk in a dual sense—to think of contamination through the rational risk paradigm as well as to take risks as savvy and aspirational economic actors.

On the surface, science and women seem to constitute potentially powerful forces against food policing. Ultimately, the book shows how they are significantly constrained by the limiting normative parameters for citizens, women, and politics.