

# Post-political uncertainties: Governing nuclear controversies in post- Fukushima Japan

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## Abstract

This article examines a set of public controversies surrounding the role of nuclear power and the threat of radioactive contamination in a post-Fukushima Japan. The empirical case study focuses on the Ministry of Economy, Trade and Industry (METI), Japan's most influential ministry and, more importantly, the former regulator of nuclear energy before the 2011 Fukushima nuclear disaster. Through participant observation of METI's public conferences, as well as interviews with state and non-state actors, I examine how particular visions of nuclear power continue to affect the basis of expert authority through which state actors handle post-Fukushima controversies and their subsequent uncertainties. In its post-Fukushima representations, METI frames nuclear power as an apolitical necessity for the well-being of the Japanese nation-state and the common humanity. It does so by mobilizing categories of uncertainty around specific political scenes, such as global warming. For METI, the potential uncertainties linked with the abandonment of nuclear power have the power to trigger political turmoil of a higher scale than those linked with Fukushima's radioactive contamination. A form of double depoliticization takes place, in which the issue of Fukushima's radioactive contamination gets depoliticized through perceived priorities that are paradoxically depicted as 'post-political' – that is, in an urgent need for immediate action and not open to in-depth deliberation. I refer to this process as establishing 'post-political uncertainties'. This kind of depoliticization raises ethical questions surrounding meaningful public participation in decisions that happen at the intersection of politics and science and technology study.

## Keywords

controversy, Fukushima, nuclear, post-political, uncertainty

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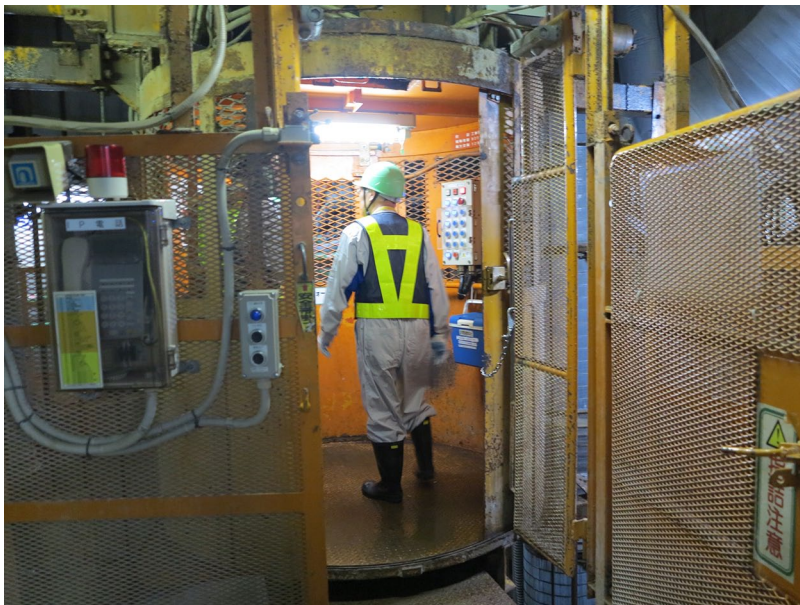
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It took three minutes to reach our destination. This does not sound like much, but when one is trapped in a cage-like elevator descending 300 meters below the ground, time passes slowly. This harrowing journey led us to the Tono Geoscience Center, a state-of-the-art R&D facility for the safe geological disposal of high-level radioactive waste (HLW) (Figure 1). Situated in the small town of Mizunami, Japan, this project was led by the Nuclear Waste Management Organization (NUMO), a Japanese entity established in 2000 by the Ministry of Economy, Trade and Industry (METI). The face of the technical advisor wore a clear expression of pride as he showed me the impressive and complex infrastructure required to dispose of HLW.

The events that led me to visit this nuclear geological disposal site were a series of state-sponsored speeches entitled ‘National symposium on the final disposal site of high-level radioactive waste’. In 2016, this set of lectures explained the long-term safe management of HLW in Japan, as well as its area of geological disposal.<sup>1</sup> In one of such speeches, the Vice-Minister of METI, Yōsuke Takagi, described the research and development that surrounded this technological project with a proud voice: ‘France and Finland have already done successful waste repositories. We were told that we could not do such a project in Japan [because of the seismic activity], but we have the scientific expertise to do so!’ These presentations were not mere narrative, but, also, as the speech of Mr. Takagi highlighted, assertions of Japan’s technical prowess in the nuclear domain compared to other countries. On such a viewpoint, nuclear waste products were transformed from a problem into a scientific opportunity and source of national pride.

Yet, most of that enthusiasm often came crashing down during the period of public questions that followed every symposium. Indeed, the series of symposia mentioned above



**Figure 1.** The Mizunami Underground Research Laboratory (photo by the author).

had happened in a politically charged environment, five years after the 2011 Fukushima nuclear disaster. The disaster had led to the discharge of dangerous radioactive materials, as well as the evacuation of more than 160 000 people. Moreover, it forced Japanese society to confront head-on the future of its nuclear industry, since nuclear power plants were shut down or suspended for safety inspections after 2011. Before March 11, 2011, Japan had 54 nuclear reactors, which provided the base load electrical power for the country's energy needs, with more than 30% of the nation's electricity (Kingston, 2013).

An atmosphere of uncertainty surrounding both Fukushima's radioactive contamination and the role of nuclear power in Japan was particularly tangible amidst the crowd that attended the aforementioned symposia. For instance, grabbing the microphone, one elderly lady inquired: 'You have been evading one of the main questions linked with geological disposal. What are we going to do with nuclear power plants? We can't put waste forever in the ground! If we keep going on with nuclear power, it will become very hard ....' Other attendees also expressed their discontent, by arguing that a focus on HLW made no sense, since Japan was currently afflicted by an important problem of radioactive contamination caused by the Fukushima nuclear disaster.

No state actors seemed to know what to reply to the people asking questions about the future of Japan's nuclear policy, nor about the management of radioactive contamination in Fukushima. The vice-minister of METI had made his point clear on the issue of HLW: 'I know there are some anti-nuclear voices in the room today, but no matter where your political allegiance stands in viewing nuclear policy, this is an issue that we have to deal with together'. In similar ways, Iwao Miyamoto, the Director of Radioactive Waste Management Technology at METI, acknowledged that nuclear power had caused much harm to Fukushima. Yet, for the present conference, the audience was told to concentrate on the urgent problems of HLW. The plan of geological disposal was described as being done for the future sake of Japan, claimed Mr. Miyamoto. Very few people applauded at the end of these meetings and most left with smirks on their faces, continuing the discussion by themselves. Observations like these were commonplace during my fieldwork in Japan, as I examined a set of controversies around the role of nuclear power and the threat of radioactive contamination after Fukushima.

In this article, I explore nuclear controversies by focusing on METI, which is one of the most influential ministries of the Government of Japan. METI is the heir to the former Ministry of International Trade and Industry (MITI), which was fundamental in cementing nuclear power in Japan. More importantly, METI used to be the former regulator of nuclear energy before the Fukushima disaster. While the Ministry no longer serves as a regulator, it remains one of the main governmental actors in the recovery process, sanctioning and rejecting the evidence linked with this disaster, as well as leading the reconstruction policies and decommissioning of the nuclear power plants (see also METI, 2014, 2015).

In the aftermath of Fukushima, I argue that METI is reframing nuclear power as an apolitical necessity for the well-being of the Japanese nation-state and the common humanity. It does so by mobilizing categories of uncertainty around specific political scenes, such as energy security or global warming. For METI, the potential uncertainties linked with the abandonment of nuclear power have the power to trigger political turmoil of a higher scale than those linked with Fukushima's radioactive contamination. A form

of double depoliticization takes place, in which the issue of Fukushima's radioactive contamination gets depoliticized through perceived priorities that are paradoxically depicted as 'post-political', that is, in an urgent need for immediate action and not open to in-depth deliberation. Throughout this article I refer to this process as 'post-political uncertainties'.

In order to introduce the notion of post-political uncertainties, I first draw from Swyngedouw's 'post-political moment', which replaces 'debate, disagreement and dissensus with a series of technologies of governing that fuse around consensus, agreement, accountancy metrics and technocratic environmental management' (2009: 601). In a post-political moment everything is politicized, but always in non-conflictual ways (Swyngedouw, 2009: 609; 2010). Swyngedouw draws heavily on the work of Rancière, who theorizes politics as a process of dissensus that confronts an established framework of perception, thought or action. Politics is a process that creates a fissure in what Rancière (2013) calls the 'regime of the sensible', a system of coordinates that defines modes of being, doing, making and communicating. It establishes a consensus around the borders, horizons and modalities between the visible and the invisible, the audible and the inaudible, the sayable and the unsayable (Rancière, 2013). In the context of Fukushima, this understanding of politics is useful for exploring how state and non-state actors mobilize particular ways of speaking, feeling and talking about nuclear-related controversies.

The Fukushima nuclear disaster has produced a climate of high uncertainty in Japan (Akiyama, 2016). To examine the nature of such uncertainties, I bring into conversation a range of works that see uncertainty through the lens of an ethnographic approach, tracking how 'politically generated uncertainty' reconfigures both the perception of a disaster and its social arrangements (Button, 2010: 16). As such, uncertainty don't just exist 'out there', but is actively produced as part of strategic and ideological tactics, especially when particular interests are threatened (Button, 2010; Michaels, 2008; Proctor, 2008). This framework opens 'an inquiry into how different sources of uncertainty, danger, and liveliness come to be known and managed while suspending the question of whether an area of uncertainty should be characterized as a sociotechnical risk, a political drama, or a financial risk' (Mathews, 2014: 84).

Lastly, I refer to controversies as events in which specific knowledge claims and policy practices become subject to public interrogation and dispute (Whatmore, 2009). In the case of this article, this refers to the role of nuclear power in post-Fukushima Japan, as well as the risk of radioactive contamination after Fukushima. As Proctor (1995: 8) highlights, controversies are not the mere result of our imperfect knowledge of a situation; they are also the political consequences of conflicting interests and structural apathies. Depending on the specific stakes of METI, uncertainties can thereby be manufactured for specific reasons, such as to downplay a controversy, as much as to keep one ongoing.

So far, there has been an ever-growing number of articles and books that detail the Fukushima nuclear disaster. Some have focused on the future role and place of nuclear energy in Japan (DeWit, 2014; Kawato, 2013), nuclear policies and regulations having led to the disaster (Kurokawa, 2016; Nakamura and Kikuchi, 2011), or the country's failure to reform its long-term nuclear policy (Hymans, 2015). Other critiques have

examined the contradictory scientific and civic narratives that tried to make sense of the scope, character, and tangible effects of radiation dangers after the disaster (Kimura, 2016; Polleri, 2019; Sternsdorff-Cisterna, 2015).

However, a trend that is apparent is the emphasis on one facet of nuclear controversies: nuclear power politics or Fukushima's radioactive contamination. In other words, an in-depth exploration of the broader network that links nuclear infrastructure and radioactive contamination has rarely been sustained. In this context, and to borrow from Jasanoff and Kim, the 'relationship of science and technology to political power has tended to remain undertheorized' (2009: 119). There is therefore an increasing need for more dialogue upon how nuclear infrastructure, its governance and the rationalization of radioactive contamination risks are enmeshed in specific ways, as well as empirically mapping how this relationship continues to unfold itself in a post-disaster context.

In the aftermath of Fukushima, studies have argued that the interpretations of uncertainty around the danger of radiation were marginalized through a series of different tactics, such as propaganda that radiation doses below a certain levels are safe (Hirakawa and Shirabe, 2015: 61). Similarly, others have provided overviews of how nuclear controversies are embedded in political, economic and social Japanese contexts, with pro-nuclear overtones (e.g. Fujigaki, 2015; Sukanuma, 2016). These works demonstrated that an important relationship exists between a specific part of the Japanese nuclear infrastructure and the current rationalization of radiation risk.

Yet, rather than depicting the influence of pro-nuclear agents in the domain of radiological safety, this article takes a different path. It explores the normative framework ingrained in the vision of nuclear power and highlights how a particular vision continues to affect the basis of expert authority through which state actors handle post-Fukushima controversies and their subsequent uncertainties.

It is useful to bring into conversation what Jasanoff and Kim (2009: 120) call 'sociotechnical imaginaries', which consist of 'collectively imagined forms of social life and social order reflected in the design and fulfillment of nation-specific scientific and/or technological projects'. Focusing on a comparative examination of the development and regulation of nuclear power between the US and South Korea, Jasanoff and Kim associate sociotechnical imaginaries 'with active exercises of state power, such as the selection of development priorities, the allocation of funds, the investment in material infrastructures, and the acceptance or suppression of political dissent' (p. 123). Though historical phenomena, sociotechnical imaginaries' relative stability are 'invoked and re-performed at key turning points in policy formation' (p. 122). I contend that the theoretical approach of sociotechnical imaginaries can be strengthened through an ethnographic focus that examines the power relationships amidst state and civic actors in the mobilization of post-Fukushima uncertainties.

I conducted fieldwork in Japan from September 2015 to August 2016, with follow-up trips from November 2016 to May 2017. I spent time in state-sponsored symposia, anti-nuclear protests, temporary evacuee housing, and contaminated farms, among other places, while conducting more than 70 semi-structured interviews with state and non-state actors. I pay close attention to the areas of uncertainty that are linked with specific sociotechnical imaginaries in nuclear power, highlighting how these uncertainties are ultimately framed in a post-political moment. Importantly, the ethnographic data presented

here do not occupy the entirety of the local discursive space that emerged after Fukushima, nor the deeply contested ideological terrain that surround nuclear policy and radioactive hazards. I offer a series of critical, but situated insights into METI's politics of expertise, allowing me to explore facets of the governance of nuclear things in the wake of a disaster, though not necessarily a state consensus. The conceptual aim is to examine how the creation of post-political uncertainties can be important tools to manage the controversies surrounding energy and toxic waste. What I ultimately highlight is how controversies surrounding Fukushima's radioactive contamination fail to become the subject of public interrogation and political disputes through the mobilization of post-political uncertainties. This kind of depoliticization raises ethical questions surrounding meaningful public participation in decisions that happen at the intersection of politics and science and technology studies.

### **Nuclear monsters and nuclear saviors**

The nuclear history of Japan has always been enmeshed in the exercise of power, while being accompanied by unique elements of repression and contestation that continue to cast shadows on present day controversies. From the end of World War II to 1952, American forces occupied Japan. Under that occupation, nuclear science was prohibited and the detailed effects of the Hiroshima and Nagasaki atomic bombing on the human body were withheld from public discussion (Yoneyama, 1999). The ignorance of the suffering of Japanese victims of atomic weapons, known as *hibakusha* (literally people exposed to radiation), was such that the Japanese public was often unaware of the victims' suffering (Pelletier, 2013). Much of this changed after March 1, 1954, when a Japanese fishing boat, the Lucky Dragon Five, was exposed to radioactive fallout near the U.S. nuclear test site of Bikini atoll (Jacobs, 2015). The death of a crew member by radiation exposure and the contamination of fish products sold at the Tokyo market brought an important collective awareness around radioactive danger, leading to the emergence of strong, nationwide, anti-nuclear movements throughout Japan. In public culture, such fear was epitomized by the figure of Godzilla. Created in 1954, Godzilla is a big green dinosaur-like mutant monster born from the by-products of nuclear tests. In the Japanese cinema of the 1950s, Godzilla is a monster that destroys and ravages Japanese cities with its powerful atomic breath.

The emergence of superpowers during the Cold War, the rise of communist China, and the Korean war soon changed the geopolitics of East Asia and, consequently, the politics of nuclear things in Japan. Under such pressure, transforming Japan into an ally with nuclear power could strengthen the geopolitical power of the United States. Indeed, having nuclear plants in Japan could stabilize the global strategic nuclear balance, by showing that an American ally could make nuclear weapons if the need ever arose. Wary of the rise of communism in the East, American forces would once again introduce nuclear power in Japan, not under the form of a bomb, but under the promise of the peaceful goals of nuclear energy, as epitomized through the narrative of the 'Atoms for Peace' program by the *International Atomic Energy Agency* (Hecht, 2012: 24). Yet how to convince a population that had suffered nuclear harm of the need to now embrace nuclear power was a tricky problem. Manipulating public opinion on nuclear energy, an

assemblage of American and Japanese actors gradually began to reconceptualize the collective imaginary of risk and the very same power that destroyed so many lives during wartime became, for the Japanese state, ‘fetishized in such a way that it promise[d] to deliver the world from the very evils it appears to have wrought’ (Weston, 2012: 439). One way to consolidate such a scenario was to embark on an important pro-nuclear propaganda campaign.

This propaganda was assured by a heterogeneous assemblage of politicians, bureaucrats, enterprises, media and scientists, which came to be known as the ‘Nuclear Village’ (*genshiryoku mura*). This heterogeneous assemblage of actors led to the creation of diverse geostrategies that promoted and cemented nuclear energy in Japanese society (Kainuma, 2011; Koide, 2011; Sukanuma, 2016). Under this influence, nuclear power was perceived as essential to the economic prosperity of the country and was promoted since the 1950s through political agendas (Johnson, 1982; Ogawa, 2013: 21). In particular, MITI deployed vast resources to make nuclear energy a national priority for a country that lacked oil (Kingston, 2012). For instance, bureaucrats developed economic policies that rewarded cooperation with the nuclear utilities, by presenting nuclear power plants as a way of saving the rural lifestyle of small villages, notably affected by depopulation or depressed economies (Aldrich, 2008). Gradually, Japan achieved one of the world’s most stable energy supplies, overcoming shocks such as the 1973 Oil Crisis. Hiroaki Koide, a retired Japanese nuclear engineer, perfectly summarized the spirit of this era during an interview conducted in 2016:

In the 60s, the ‘nuclear era’ (*genshiryoku jidai*) was beginning and nuclear energy was present everywhere. Tōkai [Tōkai Nuclear Power Plant, Japan’s first commercial nuclear power plant] was built during this era. Coal and oil were described as archaic sources of energy. Even in cartoons, nuclear power was everywhere; think of Astro Boy for instance! I was seduced by the promise of nuclear power. It was labeled as something that was completely safe and peaceful, something that was different from nuclear arsenals.

Astro Boy was born under the pen stroke of the cartoonist Osamu Tezuka in the post-war Japan of the 50s. He is a little android powered by nuclear matter and evokes, as opposed to Godzilla, a new sociocultural imaginary toward nuclear power. As Koide explained to me, Astro Boy emphasized the ‘rebirth of the atom’, where nuclear power was no longer merely associated with the scars of atomic bombings, nor with its ensuing trauma of radioactive contamination that brought new forms of injury and fears. Rather, it became seen as a technological feat, a triumph of the power of science falling under human control, and a symbol of Japan’s miraculous recovery. Where nuclear power once took life, it now protected life; Astro is constantly shown as fighting against evil and injustice.<sup>2</sup> Nuclear power, significantly contributing to the furthering of Japan’s economic prosperity, was seen as a prideful domain of technical expertise (Pelletier, 2013) and described as the ‘clean energy of the future’, (*genshiryoku akarui mirai no enerugi*) as emphasized by a billboard sign in the small town of Futaba, near the now crippled reactor of Fukushima.

METI heavily contributed to reinforcing this image in public education. For instance, books with the title ‘The exciting nuclear power land’ were distributed to primary school children to promote nuclear science (MEXT and METI, 2010). Yet, METI occupied a

very ambivalent position, as it was both promoting nuclear energy, while serving as its safety regulator. In Japan, nuclear safety was under two umbrellas, the Nuclear Safety Commission (NSC), which was under the authority of the Japanese Cabinet, and the Nuclear and Industrial Safety Agency (NISA), under METI. This position led to a political culture of collusion around nuclear technology and its infrastructure (Kurokawa, 2016). For instance, senior bureaucrats in nuclear regulatory agencies were known to retire to private sectors in the electric power companies (a practice known as *amakudari*, meaning ‘descent from heaven’) while pro-nuclear physicists were major players in the domain of nuclear safety (Nakamura and Kikuchi, 2011). Consequently, an important part of state expertise around issues of nuclear dangers and radioactive hazards was co-produced (Jasanoff, 2004) with the broader political economy of post-war Japan. Under such circumstances, a ‘myth of absolute safety’ (*zettai anzen shinwa*) surrounded the nuclear industry and the possibility of nuclear disaster was perceived as being ‘beyond assumptions’ (*sôteigai*) (Akiyama, 2016: 82).

The Fukushima disaster would throw Japan’s nuclear infrastructure into a caustic mess of uncertainty, debunking the myth of safety that had prevailed until that point, while forcing political elites to rethink the future of nuclear power. As an initial reply, in 2012 the Democratic Party of Japan (DPJ) led by Prime Minister Naoto Kan undertook a ‘National Discussion’ on Japan’s nuclear policy through deliberative polling. Crucially, the government of this period presented three policy options, including a 0% nuclear dependency scenario by 2030 (Mikami, 2015). A change in government, in which the DPJ was replaced by the more conservative Liberal Democratic Party (LDP), led to the abandonment of this policy. The pro-nuclear administration of Prime Minister Shinzō Abe reinstated nuclear power as an important base load of energy policy, with METI issuing a memorandum on the manifold problems that a zero-nuclear policy would produce (Mikami, 2015: 115). The subsequent restarts of some nuclear power plants caused vivid public criticism and major anti-nuclear demonstrations. Lastly, to eschew future conflicts of interest and the clear cases of regulatory captures that had led to Fukushima, the discredited NSC and NISA were replaced in 2012 by the Nuclear Regulation Authority (NRA) as an administrative body of the Cabinet of Japan.

## Japan without resources

The crisis that ensued from the Fukushima nuclear disaster is complex and has evolved in different ways since 2011. Initially, the crisis was epitomized by a sense of urgency, in which state experts had to navigate the uncertainties brought by Japan’s triple disaster (*higashi nihon daishinsai*), namely an earthquake, a tsunami and a nuclear disaster. In 2012, METI released one of its first public documents, entitled ‘Japan’s Challenge Towards Recovery’ (METI, 2012b). Throughout this document, the triple disaster was predominantly analyzed in terms of economic factors, while issues of ‘recovery’ focused on the safety of nuclear energy, the environmental challenge of fossil fuels, or the practical use of renewable energy in a post-Fukushima Japan. In its thirty-eight pages, there is no mention of radioactivity hazards in Fukushima. The only thing apparent is a grid explaining the different radiation doses that one can find on earth. At the top of the grid is Guarapari Beach, one of Earth’s most naturally radioactive places. At the bottom is the standard dose received



around a light water nuclear plant, with a parenthetical explanation stating that the actual results are far below the given value. Yet, the grid has no explanation of the numerous manmade radionuclides released during the disaster. By looking at only this document it would seem that the uncertainties of radiation hazards had failed to materialize.

At the beginning of 2016, I attended a series of public talks produced by METI and witnessed a similar pattern. The series was delivered all over the country and included prominent experts in business administration, economic critics and policy planners. Entitled 'Japan without resources, a symposium toward the shape of our future energy', the series of speeches was explicit in presenting nuclear power not as an option, but as a necessity, even in the aftermath of Fukushima.<sup>3</sup> In these speeches, Japan was stereotypically compared to Easter Island and with its former residents, who supposedly used all of their natural resources to a point of no-return. The energy problems of the archipelago were depicted as being intrinsically different from the problems faced by European countries; Japan was an island nation and thus unique among modern Asian countries.

The subtext was clear and reminiscent of the 1973 Oil Crisis that had cemented the necessity of nuclear power for Japan: The black swan of Fukushima should not impede of rational thinking in energy matters so to avoid reaching beyond the nation-state for expensive oil and natural gas. Since all nuclear power plants were closed after Fukushima for safety inspections, the audience was told that Japan was in a 'very precarious situation'. For the sake of the nation, nuclear power should be restarted as soon as possible. According to the panel of experts invited during the series, the shutting down of nuclear power had resulted in enhancing a very specific climate of uncertainty for the future of Japan.

The first uncertainty was linked with energy security. According to the series of symposia, Fukushima had led to a decrease in the self-sufficiency rate of electrical resources, as well as a rise of power costs. Kyōji Yoshino, the Policy Planning Coordinator of the Agency for Natural Resources and Energy at METI was quick to make this point. He did so by highlighting the deficit trade balance of Japan and by claiming that the nation suffered from one of the highest levels of dependence in its history. Given its long-term tense relations with neighboring Asian countries, it was seen as unfit for Japan to depend on external supplies. Nuclear power was seen as providing a stable, Japanese-made energy and vision of the future. After Fukushima, the government had applied strict energy saving measures. Yet, rather than praising such savings, the audience was told that the quality of life in Japan had decreased. Energy security in Japan was depicted as being in a level of crisis not with regards to the actual needs of the country, but in comparison with the electrical consumption of other countries.

The second uncertainty was linked with the future of Japanese expertise in the domain of technological innovation. According to Ryūzō Yamamoto, a Professor of Business Administration at the University of Tokoha, the decrease of electrical independence had led to a lack of international competition: 'If we continue in this actual way, Japan will lose much of its expertise to China. We are even behind Korea in terms of innovation!' Japan was depicted as at the cusp of a critical turn. 'If Japan opts for the wrong energy politics, the country will end up being lost for another 30 years!' insisted Yamamoto. This was equally apparent in R&D projects that focused on the safe geological disposal of high-level radioactive waste. Such project would only be viable through a thriving Japanese nuclear industry. Yet, this had not been the case after 2011. As I attended METI's

National Symposia on Nuclear Geological Disposal and visited the Tono Geoscience Center, projects like the burial of radioactive waste were described as domains of technical and scientific challenges, before becoming matters of safety.

The third uncertainty was associated with the apparent increase in carbon dioxide. After the release of radioactive pollutants, METI could no longer play on the trope of clean energy and resorted to a different rhetoric: global warming. Following the moratorium of nuclear power in Japan, Mr. Yoshino argued that emissions of carbon dioxide had increased dramatically due to reliance on fossil fuels. Renewable energies, such as solar panel technologies, were depicted as inefficient measures to tackle an uncertain energy future. 'In winter and during the night there's just no light. The risk with renewable energy is that we don't have any control over it (*kanri dekinai*)', claimed the economic critic Kazuyo Katsuma. After Fukushima, renewable energy was shown as getting an ungrounded preferential treatment (*yūsenteki*), as well as something that could not be economized (*keizai dekinai mono*). 'We need to be more realistic and to look at it from a bigger scale', claimed the panel of experts. It is noteworthy to emphasize that not a single speaker invited by METI had expertise on global warming nor on renewable energies. For Swyngedouw, the post-political is a consensual vision of the urban environment. Similarly, global warming was taken as a 'black box' (Latour, 1993), and presented as a 'total threat,' (Swyngedouw, 2009) that only nuclear power could ward off.

To counter these three problems, a new energy policy was proposed under the acronym of '3E+S.' This policy emphasized: 1) Energy security (E1), 2) the Environment (E2), 3) Economic efficiency, and 4) Safety (S). The 3E+S perspective was said to be the most realistic policy to tackle the three aforementioned future uncertainties after Fukushima. More interestingly, the policy relied on an energy mix that aimed for a restart of nuclear power; by 2030, 22–24% of the produced energy would come from nuclear power. Under the difficulties enumerated, a 0% nuclear option was deemed hardly realistic and METI ultimately promoted a 'safe restart' (*anzen sakaidō*) of nuclear power.

In brief, what is striking about these public speeches is how nuclear power is still considered as a key factor in the resolutions of many uncertainties arising after Fukushima, including energy security, technological expertise, and global warming. Even in the aftermath of a nuclear disaster, nuclear power was not depicted as an option, in contrast to the 2012 National Discussion, nor as a by-product of a political choice or cultural preference, but reframed as an apolitical necessity that had to be enacted for the well-being of the nation and common world. During one speech, METI had invited a cultural critic, Emi Kawaguchi-Mahn, who argued that the denuclearization of Germany was unrelated to the real risk of nuclear power; it was simply a by-product of a foreign political culture permeated by a strong anti-nuclear presence in the Green Party. The Japanese context was different and unrelated.

Such a narrative notably highlights three specific elements of a larger sociotechnical imaginary around nuclear power. First, it demonstrates that for METI nuclear power is more than electricity per se; it still stands as a perceived symbol of Japanese independence. Many of the speakers did not want to depict Japan as a nation that was saving energy, or – worse – depending on other countries like China. Nuclear power was seen as a pillar on which a strong modern nation state could and should rest.

Secondly, nuclear power also stood as a form of technological pride, wonder, and challenge. The Japanese state had always embraced technology as a way to create and maintain a gap between itself and other countries; the *wakon yōsai* idiom of pre-war Japan, translated as ‘Japanese spirit and Western techniques’ is a good example (Mizuno, 2009). While the electrical contribution of nuclear power no longer stands as a realistic energy baseload (DeWit, 2014), the technological expertise linked with nuclear power was seen as essential to maintain. Shutting down nuclear power could deprive the country of an important part of its technological expertise, bringing negative consequences for international competitiveness (see also Kawato, 2013: 478). While the infrastructure of nuclear power was crumbling under problems after Fukushima, officials spoke of dealing with technical or scientific challenges or parameters that simply needed adjustment.

Third, nuclear power also exemplifies a ‘consensual vision of the urban environment’ that presented a ‘clear and present danger’ (Swyngedouw, 2009: 601), best exemplified by the threat of global warming.

The point of importance is that these three elements rendered specific forms of uncertainties as being more important than others, for instance energy security over radiation hazards. Here, science and technology issues linked with nuclear infrastructure did not simply encode particular conceptions of what a nation-state stands for (contrast Jasanoff and Kim, 2009: 120), but were also associated with specific categories of uncertainties that drastically differ among countries. The specific future uncertainties of METI – increased dependence, negative consequences for technological competition, and global warming – stood in sharp contrast with the German nuclear viewpoint, in which ‘the rule of law and the risks of legal irresponsibility remain live and urgent topics of debate’ in the shifting consensus of nuclear phase-out (Jasanoff and Kim, 2013: 195) or against the US vision of ‘a potentially runaway technology that demands effective “containment”’ (Jasanoff and Kim, 2009: 119). For METI, perceived uncertainties were closer to the Korean imaginary in which the ‘risks and benefits of nuclear power were framed in terms of their implications for the nation’s future’ (Jasanoff and Kim, 2013: 193).

Yet, uncertainties surrounding the nation’s future were not generally shared by members of the audience. Indeed, at the end of these speeches, a heated discussion always ensued between the state officials and the members of the audience, who seemed eager to voice their concerns. For instance, an enraged elderly man shouted: ‘Why are you putting us right back into that mess after Fukushima! We won’t be able to live in Japan for 2500 years if another nuclear disaster happens!’ Another argued:

You want to know what’s the ‘best energy mix’? It’s to cut all nuclear power! I was always told that nuclear power was safe and good for the environment, but that was all false! You are going to do the same thing again! You spend all your time saying that it’s safe, but there is a gap between what you are doing and what you are saying!

Everybody applauded the man, while the expert panels fidgeted in their seats. The last speaker claimed that radioactive contamination from Fukushima had already polluted a good part of Japan and that nuclear power should be stopped before it was too late (Figure 2). The only thing that Yoshino could reply was that it was the only solution to take care of



**Figure 2.** A temporary site of radioactive waste disposal in Iitate, Fukushima. After the nuclear disaster, radioactive tainted soil and debris have been put in vinyl bags. These bags are kept in temporary storage spaces and there is still no long-term solutions concerning their disposal (photo by the author).

global warming. The dissenter was subsequently cut off and told that he could ask questions after the meeting: ‘You bet for sure, I’m going to ask some questions!’ he replied.

Electricity had been the main subject of presentation and amidst such tensions one could equally feel it in the air. At the end of the discussions, the panel of experts was invariably surrounded by members of the audience, who eagerly tried to pursue the conversation around the contamination of Fukushima. They often fought over technical matters, stating that the problem of radiation was far from being over, invoking, for instance, the long lifespan of certain radionuclides.

In his study of Mexican forestry expertise, Mathews (2011: 4) argues that state officials silenced public opposition by ‘claiming to translate generalized knowledge to local contexts, seeking to imprison their audiences in a slot of local knowledge’. Even in this context, Mathews argues that officials faced a feeling of ‘uncertain authority’ as ‘translating between the general and the local makes them vulnerable, worried about their lack of local knowledge’ (p. 4). Mathews’s definition of expertise, where experts are troubled by the public resistance encountered, stands in contrast with Mitchell’s conceptualization (2002), where an expert ‘seamlessly enlists audiences and produces subjectivities’ by rendering things technical (Mathews, 2011: 174-175). By focusing on the public performances linked with scientific knowledge in Mexico, Mathews argues that technical knowledge does not necessarily silence the political. Instead, he contends that each redefinition of technical knowledge ‘redefines expertise, the role of audiences, and forms of witnessing’ while also redefining ‘how and where political debates about justice can take place’ (2011: 23). Similarly, the dynamic present during these public talks did not imply a unidirectional relationship, in which participants simply listened to expert teachings. It also implied a back-and-forth exchange about the future uncertainties that should gain predominant attention.

Indeed, both parties tried to mobilize different categories of uncertainty around the controversies that the nuclear disaster had caused. Members of the audience were trying to make ‘visible what had no business being seen’, that is, radioactive contamination (Rancière, in Swyngedouw, 2009: 607). While none of the presentations were designed to address the topic of radioactive hazards, the question and answer periods were spaces of intense political debates in which the audience tried to reframe the problem produced by the disaster, not around a politics of uncertain trade level, power costs or global warming, but around the threat of radioactive release, which many saw as imperilling the future of Japan. Yet, these in-depth debates, which aimed at challenging the very framework of what could be discussed or not after Fukushima, were unconditionally ignored by the panel of experts who put forward energy security, technological expertise, and global warming as issues that had to be dealt with.

The disregard of radioactive risks was also made apparent during an interview conducted with Junsō, an informant formerly employed by METI and Tokyo Electric Power Company (TEPCO), the owner of the Fukushima Dai’ichi plant. Junsō (a pseudonym) had notably been involved in the negotiations surrounding the reorganization of evacuation zones with the local municipalities of Fukushima. He explained to me: ‘Even after I was able to build trust with the local people, I had the difficulty of dealing with people from outside who refused to see the real ongoing situation because they benefit from thinking about imaginary damages’.

Junsō was clear to emphasize that the only cases of disaster-related deaths were caused by the stress of evacuation and not by radiation exposure. In his narrative, radioactive contamination was clearly a post-political problem that couldn’t be open to contestation. If uncertainties did arise, they were of an ‘individual’ nature, as he had emphasized, that is, from outside people that ‘refused to see the real ongoing situation’. Hence, they were perceived as an anomaly in Japanese normative culture. As Fisker-Nielsen (2012: 20) explains in this regard: ‘At the local level in Japan, the individual is normally understood as standing in the way of collective national, political or economic interests. This is increasingly seen as political rhetoric devoid of substance which caters to elite interests’.

In inquiring about radioactive contamination, I was struck by a series of contradictions rarely problematized by my interlocutor. For instance, Junsō did not believe that current technology for tracking radioactive contamination was advanced enough, that a complete decontamination of Fukushima was possible, nor that absolute safety could exist in terms of nuclear power – issues that the METI’s symposia had equally explained. Yet, amidst those contradictions, radioactive risk was not a form of potential uncertainty that demanded the same amount of focus as global warming. Why is that so? Some have argued for explanations that highlight Japan’s conventional political culture, stating that:

Men working for dominant institutions that prioritize the economy have built the system that created nuclear energy plants. They believe in the system and have invested their life work within the system. If radiation from Fukushima proved to be harmful to their families and could eventually destroy the economy, they would have to fundamentally re-evaluate their role. To consider the threat of radiation from the technology they have created is to doubt the system in which they help maintain, as well as their values and life choices (Morioka, 2015: 6).

This is clearly a part of the story. However, mentioning Japanese specificities as single factor explanations for the mitigation of hazardous pollutants forecloses the complexities of post-disaster management politics, with the additional effect of removing the responsibility and blame of both government agencies and corporate polluters (Button, 2010: 155). Homogeneous behavioral traits do little to explain the entanglement of science-technology-society interface (contrast Funabashi, 2012: 71), and beyond a cultural deterministic approach, there are also deeper structuring and conjunctural factors that mitigate the risk of radioactive contamination in a post-Fukushima scenario.

Additionally, METI's understanding of the controversies linked with this nuclear disaster ought to be seen as being co-produced with specific sociocultural imaginaries (Jasanoff, 2004), where knowledge and order co-evolve. This was particularly apparent in the picture given by Junsō's, whose expertise around nuclear matter was imbued in 'technostrategic language' (Cohn, 1987), that is, terminologies that abstract the realities of nuclear materials, preventing the expression of specific values, and allowing experts (Japanese or not) to reject the idea that they can also be victims of their creation. Indeed, Junsō described the problem of radioactive contamination by referring to terms such as 'negotiation', 'due diligence', 'agreement' and 'transaction'.

Such sociotechnical imaginaries prioritize certain forms of uncertainties as being more important than others. This makes perfect sense for a state agency like METI, which has jurisdiction over industrial policy and energy security, in which abandoning nuclear power has the potentiality to trigger political risks of higher scale than those linked with radiation exposure. To address 'more urgent' uncertainties, METI has to temporarily stabilize the risk of radiation (see Thompson, 2004: 83 for a similar argument). Consensual action around energy security or global warming is required at the expense of radiation's discussion.

It could be argued that this is not particularly problematic, since other state ministries are implicated in managing radiation hazards, such as the Ministry of the Environment, which takes care of radioactive decontamination in Fukushima. Indeed, different views on the management of uncertainties requiring remediation are found among state agencies. For instance, an important conflict between METI and the Ministry of the Environment (MOE) emerged around the amounts of government expenses that surround the decontamination of Fukushima (see Mainichi Shinbun, 2015). These internal tensions within the Japanese state are reinforced by bureaucratic problems of 'vertical administration' (*tatewari gyōsei*), where different ministries defend their own field of competence, without coordination with other ministries. The vertical administration of different problems also demonstrates that the state construct nuclear power versus radiation exposure as different kinds of politics. Energy security, technical expertise and climate change reside in the realm of geopolitics for METI, while radiation exposure resides in the realm of health and environmental politics for MOE, notably through decontamination projects. In this case, post-political uncertainties are also moments where the state seeks to keep these kinds of politics fundamentally separated.

However, METI is one of the main governmental actors in the disaster recovery process. Importantly, while METI does not produce nor track data relating to radioactive contamination, the practical operations for designating areas under which evacuation orders are issued fall under its jurisdiction (METI, 2012a). Consequently, if radioactive

contamination is depicted as an important health hazard it will impede the reopening of nuclear power plants across Japan, the R&D of NUMO, and the economic policies previously highlighted in the 3E+S.

## Bulldozing uncertainties

Against METI's prevention of the politicization of radioactive hazards, many had found alternative political planes to express their frustration. One important point of gathering during my fieldwork was the Anti-Nuclear Tent (*datsugenpatsu tento*), a small wooden shack built near the bureaucratic office of METI in the governmental district of Kasumigaseki, Tokyo (Figure 3). It had been established as a means to protest nuclear power and the health danger of radioactive contamination after Fukushima. Next to the office of METI, the Tent displayed slogans such as 'Don't erase the voices of Fukushima! Don't trust the government and the big media! Save the children of Fukushima!'

As I spent time interviewing members of the Tent, I soon learned that many protestors were once part of the All-Campus Joint Struggle League (*zenkyōtō*), the Japanese equivalent of May 68. This social movement consisted of a series of student protests against the traditional values of capitalism, consumerism and American imperialism. Therefore, even before 2011, many members of the Tent had already developed a strong anti-nuclear agenda, as well as a distrust of their government. They believed that Japan was not a democracy, but, as the director of the Tent Tarō Fuchigami explained to me, a 'police town'.

For members of the Tent raised in the tumultuous period of May 68, nuclear power was an undemocratic source of energy. Many argued to me that nuclear energy was never developed



Figure 3. The Anti-Nuclear Tent (photo by the author).

to produce stable electricity, but rather to create the atomic bomb. As such, for members of the Tent, nuclear power plants were not born for the demos, but for the polemos or militaristic purposes. For them, the history of nuclear energy was embedded with mass destruction and inequality. Similarly, Fuchigami was convinced that the government had minimized the harmful influence of radioactive contamination after Fukushima, so as to restart nuclear power as soon as possible. Stating his disdain for capitalism, Fuchigami explained to me that nuclear power had built a needless dependence toward electrical consumption:

We waste too much electricity and the government makes us believe that we need more of it! The neon in Ginza is it really necessary? And the LED all over the city? We have become too comfortable. This consumption is not even linked with our actual needs! When the power plants stopped after Fukushima, we still had light! It was enough! The restart of nuclear power is simply for the financial sake of the electrical companies and for the benefit of the government. It's not for the well-being of the population!

For these anti-nuclear activists, nuclear power was experienced as a problem of extravagance (*zeitaku*), as well as a problem of undemocratic values that put the utilitarian interests of electric companies at the expense of citizens. What became apparent during my fieldwork with anti-nuclear activists was the fact that they had developed their own sociotechnical imaginaries around nuclear power, molded in a very different context and ideology than those of METI. Radioactive contamination was consequently perceived as the extension of an already established political and social precarity. Indeed, the protesters of the Tent portrayed radiation as a ubiquitous threat to life, the product of an undemocratic legacy born from the bastard union of warfare and capitalism. When I interviewed anti-nuclear activists, it was not rare for me to hear phrases such as 'Radioactivity (*hōshandō*) is the devil (*akuma*)!' or 'The atom is wicked (*kaku ha aku*)!'

As anti-nuclear activists, members of the Tent mobilized their own categories of uncertainty in a post-Fukushima Japan. The uncertainties that demanded urgent action for them were not related to energy security, technological expertise or global warming. Rather, they were associated with potential health hazards from radioactive exposure, ecological collapse from radioactive contamination, and the downfall of democracy throughout Japan. Both METI and members of the Tent were concerned by the uncertain path of a post-Fukushima Japan. Yet, the categories of uncertainty that they mobilized to advance their vision were utterly antagonistic. What happened to the uncertainties put forward by this small anti-nuclear organization, mainly composed of elderly individuals? How did the state reply to them?

The post-political moment, 'relies on either including all in a consensual pluralist order and on excluding radically those who posit themselves outside the consensus. For them, ... the law is suspended; they are literally put outside the law and treated as extremists and terrorists' (Swyngedouw, 2009: 610). By resisting the road of 'non-committal way' and 'non-conflict' (p. 609), the members of the Tent had posited themselves outside the consensual pluralist order that emphasized the safe restart of nuclear power in Japan, as well as the recovery of Fukushima. State replies toward members of the Tent precisely echoed the post-political moment. Indeed, members belonging to the Anti-Nuclear Tent were facing a Strategic Lawsuit Against Public Participation brought by the government.



That type of lawsuit usually aims to silence critics by burdening them with the cost of a legal defense until they abandon their opposition. However, when many people began to support the Tent with financial donations, the government claimed that members of the Tent were illegally occupying private property and ordered the ‘evacuation’ of the Anti-Nuclear Tent, which was next to the offices of METI. In the small hours of August 21, 2016, a bulldozer came and swipe the small barracks clean off from the ground.

Members of the public could rightly participate in discussing post-Fukushima nuclear controversies, as in the question period of METI’s symposia. Yet, they had to follow valid procedures of political participation according to the state, which usually fell within the configuration that actors like METI had recognized as legitimate or not. When public actors tried to mobilize different uncertainties around nuclear policies or radiation harm, they faced the real risk of being trapped in a post-political moment, where less urgent uncertainties were depoliticized via means of bulldozers.

### **Long live the King!**

It is a well-known story that politically conservative actors support the creation of uncertainty to protect their interests (Magnus, 2008), as they ‘seek to maintain the asymmetrical balance of power by protecting corporate and state interests over the public good’ (Button, 2010: 14). This article aims to emphasize that the managing of uncertainties is much more efficient in controlling public controversies when combined with a post-political moment.

The officials that I met all clearly realized that the myth of nuclear safety was detrimental to the well-being of the Japanese nation-state. Now, it was a question of weighing the risks and benefits of a post-Fukushima scenario – one in which radiation danger did not have the weight to tip the balance. METI’s definition of what counted as a higher risk was not shared by the public, as exemplified by the tension-filled debates of their public talks or the Anti-Nuclear Tent. Only through the instantiation of specific categories of post-political uncertainties around nuclear power could METI enact its Japanese vision of the future.

In the context of the Chernobyl disaster, Petryna (2013) argues that scientific expertise around radiation is a kind of ‘partial knowledge’, where challenges concern both the analysis of biophysical damages and the regulation of uncertainty. She highlights how the changing dynamic between the known and the unknown affects knowledge production, while framing agents as either experts or lay people. ‘A catastrophe whose scale was unimaginable, difficult to map, and ‘saturating’ became *manageable* through a particular dynamic: non knowledge became crucial to the deployment of authoritative knowledge, especially as it applied to the management of exposed population’ (Petryna, 2013: 39). Similarly, secrecy around radiation harm often became a primordial part of the collapsing Soviet regime. The ‘politics of invisibility’ that follow radiation harm was equally enacted by the production of scientific uncertainties around low-dose exposure, the use of deceitful dosimetry, the non-legitimization of local expert voices, and the branding of the local population as suffering from radiophobia (Kuchinskaya, 2014).

While these forms of secrecy and ignorance are also present in official governance of radioactive contamination after Fukushima, the notion of post-political uncertainty

highlights a different technique of government in the management of nuclear controversies. Rather than resort to secrecy, as in the case of Chernobyl, the management of nuclear controversies through post-political uncertainties acts as a specific distribution of places, actors, activities and agendas (Rancière, 2013; Swyngedouw, 2009) that contain disruptive uncertainties.

My account has explored the normative framework ingrained in the vision of nuclear power, by demonstrating that particular imaginaries continue to affect the basis of expert authority in how the state handles future uncertainties. Specific uncertainties engendered with the abandonment of nuclear power gain supremacy over the uncertainties of radiation hazards, invariably foreclosing the expression of concern of radioactive contamination through a post-political moment; this is what I have called 'post-political uncertainties'. By relying on post-political uncertainties METI forecloses the very possibility of alternative viewpoints around who or what matters in a post-Fukushima Japan. This has led to a form of double depoliticization, where METI depoliticized the issue of radioactive contamination through more important priorities that are depicted as post-political, that is, as things that 'have to be taken care of' and that are not open to dissent.

Still, post-political uncertainties are not enacted in a vacuum, but in given socio-cultural relationships and exchange amidst different groups. In this, we need to acknowledge that while particular forms of uncertainties cannot merely be explained by cultural determinism, they are always in dialogue with prior sociotechnical imaginaries and culture, making their enactment quite different amidst societies. In that regard, Strathern (1995: 428) notes: 'If we think of present-day cultures as the "offspring" of past ones, we see new combinations forever being put together out of old cultural elements.' What then becomes pertinent is to target the areas of uncertainty linked with a post-political moment, examining how these uncertainties are differently articulated. The relationship of post-political uncertainties with changing visions of the Japanese future highlights a shift from postwar narratives of economic and technical advancements (the idea of 'unlimited' nuclear energy) to a contemporary sense of national vulnerability (climate change, economic turmoil). With the failure of the postwar nuclear narrative, METI's mobilization of post-political uncertainties can be seen as deeply tied to this shift, especially in order to manage the risks and vulnerabilities of an ecologically and economically precarious Japan.

In the end, post-political uncertainties show how nuclear controversies are managed in liberal democracy that nominally rely on public participation, but constrains them so that they are not disruptive. In this way, political leaders and technical experts encourage limited forms of public participation as ends unto themselves, rather than as means for actually affecting policy. Democracy risks becoming mere public participation as opposed to participation in actual decision making. This remains an important inquiry for the field of STS, which has argued that 'more public participation in technical decision-making improves the public value and quality of science and technology' (Sismondo, 2010: 183). Going beyond issues such as the qualities of relevant publics, as Wynne (2005) argues, STS researchers can explore how post-political uncertainties create a semblance of political participation, which not only stand as a form of tokenistic participation, but contribute toward the marginalization of science and democracy.

Myths are myths for a reason: They resist the test of time, define ideal stereotypical cultures, create affective structure and are constantly reconfigured in response to present

societal needs. Japan's nuclear infrastructure of regulatory capture is perhaps no longer present, but its legacy is still alive. The nuclear safety myth hasn't died *per se*; it is instead taking new forms, and even mutating toward the rationalization of radioactive contamination. As Thompson argues, change does not imply that the 'legacies of older representations, identities, discourses and institutions disappear, but rather that they realign and reemerge' (2004: 83). The changes following nuclear controversies in a post-Fukushima Japan reflects a perpetuation of similar structural harms that made this disaster possible, while continuing to mitigate radiation hazards, echoing the continuity of monarchy amidst ever-changing kings: *The nuclear safety myth is dead! Long live the nuclear safety myth!*

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## Notes

1. The quotes and explanations that follow are derived from two speeches held at the Otemachi Sankei Plaza Hall (9 May, 2016) and the Hiroshima JA Building (17 June, 2017). Both speeches were sponsored by METI's Agency for Natural Resources and Energy, as well as NUMO. I have translated all quotes in this article. In Japanese, family names usually precede given names; this order was reversed so as to not confuse the English reader.
2. The Japanese name of Astro Boy (*tetsuwan atomu*), or *Mighty Atom*, is devoid of any negativity. Moreover, even the role of Godzilla gradually began to shift from a monster that ravaged Japan to a protector of life, fighting evil robots and monstrous creatures to save Tokyo. This is clearly apparent when one looks at the movies of Godzilla from the 70s and 80s.
3. The following quotes and explanations are derived from two particular speeches held at the Fukui Public Hall (16 March, 2016) and the Hyōgo Prefectural Civic Centre (13 June, 2016).

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