

Fukushima: An Assessment of the Quake, Tsunami and Nuclear Meltdown 福島—地震、津波、そしてメルトダウンの評価

Gavan McCormack

Between 2012 and 2014 we posted a number of articles on contemporary affairs without giving them volume and issue numbers or dates. Often the date can be determined from internal evidence in the article, but sometimes not. We have decided retrospectively to list all of them as Volume 10, Issue 54 with a date of 2012 with the understanding that all were published between 2012 and 2014.

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3:11 - The What

It is just over two years since Japan's quake, tsunami, and nuclear meltdown. It was Japan's 3rd nuclear catastrophe, at level 7 highest on the scale and on a par with Chernobyl, although, unlike Hiroshima and Nagasaki, it was self-inflicted. The triple event left 20,000 dead, 315,000 refugees, and a devastated swathe of productive farm and fish country and its towns and villages that will take decades, at least, to recover.

Today, the Government of Japan tends to refer to the "Great East Japan Earthquake," preferring to focus on the quake and tsunami rather than the meltdown, as if it were some inexplicable act of god. It talks of its policies for economic revival, reconstruction and crisis management, but little of the nuclear crisis.^[1]

The triple catastrophe is often referred to as "soteigai" (unimaginable) but we now know was not the case. The Diet committee that investigated the accident pointed out last year that the disaster was **structural, man-made**, brought about by the failings of the power company and of the national government. Even *before Fukushima*, the nuclear industry was known for data falsification and fabrication, the duping of safety inspectors, the belittling of risk and the failure to report criticality incidents and emergency shut-downs. Directly and indirectly, politicians, bureaucrats, industrialists, lawyers, media groups, academics also collaborated, constituting in sum the so-called "nuclear village." "Japan's nuclear industry became, as one critic put it, "a black hole of criminal malfeasance, incompetence, and corruption"^[2]

At Fukushima, where a hydrogen explosion blew the roof off reactor four days after the quake, 1,535 irradiated fuel rods remain stored on its **5th floor**. They still cannot be removed, so water must continue to be poured, some of it inevitably finding its way into the surrounding soil and sea. (Yomiuri Shimbun 8 March). One fish caught in the nearby seas in late February was found to have 5,100 times the safe limit of caesium (Kyodo 2 March). A 3,000-strong workforce struggles to stabilize and dismantle the plant. Its work will take at least 30 years.

3:11 - The Why

For over half a century (beginning just 10 years after Hiroshima and Nagasaki), Japan's leaders pursued the goal of a nuclear future, what in recent years they described as "*genshiryoku rikkoku*" (building a nuclear power state). Persuaded by Eisenhower's talk of "atoms for peace," they believed that nuclear weapons and nuclear energy could be completely separate and they believed that nuclear energy could be safe in Japan despite the archipelago being poised on clashing terrestrial plates - accustomed to earthquakes (20 percent of the world's total), volcanoes, typhoons and tidal waves (tsunami), and criss-crossed by the fault lines of various subterranean fissures. They believed in the chimera of eternal, almost limitless energy. Their *hubris* was sublime.

In the 70s and 80s they justified nuclear expansion on economic grounds as the alternative to oil and coal, and in the early 2000s as the key to counter global warming. The nuclear village gradually expanded from power generation into fuel enrichment, recycling, fast breeder reactors, MOX fuel, and nuclear waste treatment, the national policy (*kokusaku*) core of the Japanese economy.

Elsewhere, national referendums and parliamentary resolutions limited or prohibited nuclear energy, but in Japan the government-centered nuclear village ignored, suppressed, and bought off the resistance, steadily increasing the construction of nuclear plants, channelling trillions of yen into nuclear research and development.

So, Japan's nuclear system was problematic long before the tsunami crashed into its Fukushima plant in March 2011.

3:11 - The Aftermath

(a) Government:

Although the government did allocate ¥19trillion (ca \$200 billion) for reconstruction, much of that was *misappropriated* - some actually to subsidize more nuclear research, and some (¥2.3 bn) to fund countermeasures for the country's whaling ships to deploy against the Sea Shepherd in the southern ocean. Victims are now launching action for compensation in the courts against government and Tepco.

The DPJ government in September 2012, under huge social pressure, adopted the "zero nuclear option" as its policy. However, the nuclear village in Japan, and the governments of the US, Britain, and France, pressured it to the extent that the words—"zero nuclear power"—were deleted from the Cabinet resolution the following week. In due course, in December 2012, the LDP (the party that had led the country down the nuclear path), was restored to power.

Two weeks ago, Prime Minister Abe announced that those reactors that pass the new safety test would restart within a year. Areva (the French nuclear company that is a major supplier of power generating equipment) announced just days ago that Japan would restart 6 reactors by end of 2013, and two-thirds of all within several years. The Asahi reckons not one qualifies as of now, and that the estimated cost of meeting the new criteria would be ca ¥1t (= ca \$11bn) (AS, 27 February

2013).

Not only does the government today plan to switch back on the existing reactors, but it has no plans to liquidate the vast interlocking elements of the nuclear archipelago, including the world's most intensive concentration of civilian nuclear energy facilities (at Rokkasho). It appears to maintain the dream of completing the nuclear cycle - from fuel processing and enrichment (including MOX, or Pu + uranium), through power generation to waste reprocessing and storage - or to abandon the long and desperate struggle to master fast-breeder technology, something so prodigiously difficult and expensive that the rest of the world has set it aside as a pipe-dream. Nuclear plant export is identified as a major growth sector for the economy.

As for the so-called "back end," Japan's accumulated nuclear wastes include roughly one fifth of the world's civil plutonium stocks (in excess of 50 tonnes or hundreds of nuclear weapons-worth) and approximately 17,000 tonnes of reactor waste (much of it spent fuel rods). Low-level wastes are held in 200-liter drums, both at nation-wide reactor sites and at Rokkasho (where it is to be covered with soil and closely guarded for at least 300 years). High level wastes, vitrified and in canisters, are stored initially for 30 to 50 years until the surface temperature declines from around 500 degrees centigrade to 200 degrees centigrade, at which point they are to be buried too, in 300 meter deep underground caverns (at some site yet to be identified) where their radiation will further dissipate over millennia. *Over millennia.*

So official Japan, two years on from Fukushima, maintains and gradually restores its identity as

nuclear archipelago, as plutonium superstate.

(b) Civil Society

Faced with the March 11 catastrophe, many people concluded that Japan's energy and nuclear power policies had to be fundamentally changed. What ensued in 2011-12 was the greatest political mobilization by its citizenry seen in Japan in at least 50 years, but today, the superficial impression that mobilization seems to have slightly lost momentum. (I hope I am wrong and that others will correct me.)

(c) Japan and the World

Outside Japan, there are now about 100 reactors in Asia, and another 100 on drawing boards or under construction. But if the country whose scientific and engineering skills are the envy of the world can be guilty of the miscalculations, malpractice and incompetence that have marked the past half-century in Japan, can the rest of the world do better?

The challenge Japan faces is to scrap a core national policy of the past half century and to make the shift from nuclear promotion to a renewable energy system beyond carbon and uranium. If Japan were to go that way, the world would very likely follow. But it is a revolutionary agenda, and can only be possible under the pressure of a mobilized and determined national citizenry that wrests control over the levers of state power from the irresponsible bureaucratic and political forces that have driven it over the past 50 years. Much depends on the outcome.

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[1] “The Great East Japan Earthquake - two years on,” distributed by Embassy of Japan, Canberra, 5 March 2013.

[2] Jake Adelstein, “The Yakuza and the Nuclear mafia: Nationalisation looms for TEPCO,” *The Atlantic*, 30 December 2011).