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Amartya Sen's Capability Approach, Democratic Governance and Japan's Fukushima Disaster

アマルティア・センのケイバビリティ・アプローチ、民主政と福島の大惨事

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Introduction

The capability approach (CA) pioneered by Amartya Sen and developed by many others has become decisively influential over the last two decades as a normative framework for assessing social arrangements, social justice, equality, and quality of life, as well as for designing policies (Robeyns, 2011). The CA has also been seen as a theory of social justice seeking to reduce social exclusion and inequalities and to enhance global justice. The CA is probably best known for having inspired the creation of the Human Development Index (HDI) in 1990 by the United Nations Development Programme (UNDP) to annually rank countries by level of human development or well-being. This well-known approach has played a key role in advancing alternative ideas about development and welfare, rather than GDP growth. Thus, evaluated in CA theoretical terms, countries like Japan, for example, may not necessarily be judged to be *rich*, although on paper, by such measures as GDP and per capita GDP they may rank amongst the world's most prosperous nations.

This paper has three parts. First, I begin with a short review of the capability approach. Second, I explore the “*yutakasa*” of Japan, based on the CA. As the Japanese word *yutakasa* (richness or affluence) encompasses not only economic and material but also sociopolitical and spiritual dimensions of human welfare, it links up with the theoretical insights of the capability approach. Third, I turn to Sen's important work on famines in authoritarian regimes to consider, by analogy, exposure to radiation in order to reflect on the ongoing nuclear disaster in Fukushima.

The Capability Approach

Let us briefly review the capability approach (focusing on Sen's vision). One of Sen's major contributions lies in framing a distinct paradigm for interpersonal/inter-country comparisons of welfare, shifting away from traditional approaches, which measure social progress and well-being using a narrow focus on opulence (i.e., GDP expansion), primary goods, and utilities. By contrast, Sen understands human well-being as a multidimensional phenomenon that cannot be captured by a single indicator such as income. Hence, he proposes enlarging the informational space in assessments of well-being achievements with emphasis on two concepts: functionings and capabilities.

In Sen's view, the life of a person consists of “a sequence of things the person does, or states of being he or she achieves, and these constitute a collection of ‘functionings’ – doings and beings the person achieves” (Sen & Drèze, India, 1999, p.10). In other words, functionings refer to “the various things a person may value doing or being” (Sen, 1999, p.75), or the valuable activities and states constitutive of a person's well-being. Examples of functionings include both basic and complex achievements such as living long, being adequately nourished, enjoying good health, being happy, having self-respect, and participating in social and political activities in the community. Functioning is closely related to another core concept: capability. “‘Capability’ refers to the alternative [reachable] combinations of functionings from which a person can choose. Thus, the notion of capability is essentially one of freedom – the range of options a person has in deciding what kind of a life to lead” (Sen & Drèze, India, 1999, pp. 10-11). In other words, capabilities refer to genuine freedoms a person “enjoys to lead the kind of life he or she has reason to value” (Sen, 1999, p.87). An obvious example of capability deprivation is starvation, assuming a person considers getting enough food and nutrition to be a valuable state. The CA makes a clear distinction between someone destitute having no food for a long time and someone with a decent income dieting or fasting in practicing one's religious faith. The latter has the freedom to resume a normal diet, while the former has no freedom of choice. One of the capabilities CA researchers have recently given special attention to is “external capabilities” “that describe cases in which a person is able to achieve additional functionings through a direct connection with another person” (Foster & Handy, 2008, p.4). A familiar example of external capabilities in developed countries can be a housebound grandmother who wishes to have social contact and mental stimulus, and gains the external capability, with the help of her granddaughter, of using “the Internet [that] may offer a significant means of social participation” and of expanding her own horizons (Atkinson, Cantillon, Marlier, & Nolan, 2002, p.180). Hence, we can see that Information and Communications Technology (ICT) can be instrumental for human development and social change.

So, how well has the capability approach been known and employed in Japan? The conceptual and theoretical foundations of the CA may not be widely known. The term “capability approach” was first translated into Japanese as “*senzai nouryoku* approach” and is still sometimes referred as it is. Even in a public exchange of letters of Oe Kenzaburo with Amartya Sen (whose letters were translated back and forth between Japanese and English by a third person), Oe adopts the word “*senzai nouryoku*” (see *Bouryoku ni sakaratte kaku*, Asahi Shimbun Sha, 2006). *Senzai nouryoku* denotes hidden abilities or qualities that may be potentially developed, which conveys misleading meanings distinct from Sen's concept of capabilities. Furthermore, it is questionable that the CA has been widely adopted in policy analyses and designs, given Japan's “GDP fetishism” and preference for closed-door politics, as opposed to Sen's recommendation to place public deliberation, participation, and scrutiny at the heart of policy development and implementation.

Human Development Report 2011 was released on November 2, 2011. Japan was ranked 12th among 187 countries and nations with “very high human development.” At least two issues bear noting here. First, *Human Development Report* is still work in progress and may not perfectly capture the complex social reality of Japan or any other country in a number. Human Development Index (HDI) was originated when a renowned Pakistani economist, the late Mahbub ul Haq, asked and persuaded his reluctant friend Sen to make something “as equally vulgar as GDP” to put the idea of quality of life into action and to gain visibility and publicity from political leaders and the media.¹ Second, Inequality-adjusted HDI and Multidimensional Poverty Index were not included in Japan's report.² When these indices are taken into account, as we will examine in the following section, Japan's rankings would likely be lowered.

In sum, in Sen's capability approach, human well-being should be assessed in light of individuals' social, economic and political environment as well as two elements: functionings (to put it simply, what one is actually able to do and to be) and capabilities (what one could do and be). Capabilities refer to the substantive freedoms to pursue a different combination of functionings chosen by an individual. This definition leads to an *ex ante* perspective that well-being needs to be assessed prior to a person's choice and behavior (here, I do not go into the details of measurement issues). Hence, freedoms are also one of the key components of this approach. Sen does not favor or advocate a particular concept of the good life, but rather emphasizes the importance of freedoms that each individual exercises concerning the options that matter most to her or him. He, therefore, sees and advocates the expansion of a range of genuine freedoms and choices to each individual, understood as human development.

Is Japan a truly rich country?

The approach can provide a theoretical basis for critically analyzing Japan in light of *yutakasa*. As Sen puts it quite well: “A country can be very rich in

conventional economic terms (i.e., in terms of the value of commodities produced per capita) and still be *very poor in the achieved quality of human life*" (Sen, 2005, pp. 3-4, emphasis added). Why can a country with plenty of money be *very poor*? Or, put differently, why does the capability approach not regard high income (or GDP per capita) as a reliable proxy for individual (or societal) advantage? At least four answers can be given. First of all, we need to take into account conversion factors; obtaining resources such as goods and services is one thing and converting them into a functioning realm is another thing. For example, a bicycle makes it possible to move around freely. The mere possession of a bicycle does not in itself, however, assure this functioning of mobility. An individual with a handicap would have difficulty in actually converting this resource into mobility. Similarly, a country may be very good at achieving high economic growth, but may not be able to convert the national income to functionings such as to assure well-being for the population. In fact, many Japanese may have wondered if the country is so wealthy or "*yutaka*," why can they not afford more safety, security, wellness, or happiness³ than others (Nathan, 2004).

Second, an exclusive focus on GDP or GDP/person is not sufficient because well-being has been recognized as a multidimensional phenomenon that cannot be reduced to wealth or income. These measures also fail to indicate how well people live and how equally economic resources or functionings are distributed among individual, households, and different social groups. The evidence of this argument on distributive justice can be found in the issues of *kakusa shakai* (disparity or social inequality) of Japan, which have been hotly debated in recent years (see Tachibanaki, 2006, Yamada, 2007, Slater, 2010). Indeed, "Japan's level of poverty (meaning people who live on less than half the median income) is still the 4th highest across the OECD area."⁴ Those living below the level of poverty can hardly be considered to have a decent standard of living. Another example of a grossly uneven development gap is *kaso* areas that "have experienced a significant population loss, whereby the area has experienced declines in its vitality and is in a lower level in terms of production functioning and infrastructures related to daily living, compared to other areas" (David, Dusingberre, Evans, Matanle, & Mizohata, 2011, p.17). These predominantly rural areas, whose populations are disproportionately composed of older people, lag behind in standards of living, compared to the rest of the population and make up more than half of Japanese territory. Lacking viable alternatives for economic survival, these are precisely the areas that have been lured with generous subsidies as "ideal" construction locations for nuclear power plants designed to transmit electricity to urban areas. This describes the spatial structure of social injustice, whereby urban areas enjoy high consumption of electricity, whereas *kaso* areas are reduced to "a means" of electric power generation and pursuing the subsidies that, as we will show, imperil rural locals. Moreover, executives of the electric power companies feather their own nest (*amakudari*), while subcontract workers, many of them hailing from *kaso* areas, are discarded as "nuclear gypsies" or the temps on the move who do dirty dangerous work for a pittance (Jobin 2011).



Kaso map: Dark areas are *kaso* areas. Source: *kaso taisakuno genkyo* (The Present State of *Kaso* Measures) (2007, p. 16) by Ministry of Internal Affairs and Communications, Japan.

Third, there seems to be some confusion between opulence and societal well-being in Japan. Amartya Sen writes as follows: "Human beings are the agents, beneficiaries and adjudicators of progress, but they also happen to be – directly or indirectly – the primary means of all production. This dual role of human beings provides a rich ground for confusion of ends and means in planning and policy-making" (Sen, 2005, p. 3). Sen clearly distinguishes between economic prosperity and human well-being. "First, economic prosperity is no more than one of the means to enriching the lives of people. It is a foundational confusion to give it the status of an end. Secondly, even as a means, merely enhancing average economic opulence can be quite inefficient in the pursuit of the really valuable ends." (ibid., p. 4).

Japan may have long suffered "costly confusions of ends and means" against which Sen warned (Sen, 2005, p. 4). Gavan McCormack writes: "Nominally, the Constitution of 1947 declared the people sovereign, but the promise remains to be fulfilled. Long seen as the favored child, and major beneficiary of the Cold War, Japan looks increasingly like its orphan, unsure of its identity, lacking a sense of direction, drifting, unable to conceive of a goal beyond GDP expansion yet increasingly dissatisfied with it" (McCormack, 2001, xii). In fact, there have been policies of drift, where public-works projects have been seen as an important "means" for economic growth. "Japan spent \$6.3 trillion on construction-related public investment between 1991 and September of [2008] " during a period when public spending was slashed and budget deficits dramatically increased (*NY Times*, February 5, 2009). It is well known that Japan's rural areas are littered with many pork-barrel projects of *hakomono* and other buildings (white elephants or eerie empty gestures) (for more details, see Feldhoff, Mizohata, Seaton, 2011). Much infrastructure spending has been a monumental waste with numerous bridges, breakwaters, dams, and roads having been built in areas devoid of the economically active population, social interaction, and traffic. These *hakomono* may be instrumentally significant for certain locals—especially people with vested interests, but they carry no intrinsic importance for the well-being of the local people and are irrelevant to today's knowledge-based economy. Meanwhile, the importance of education, for instance, has been neglected. A former vice president of the World Bank, Nishimizu Mieko points out⁵ that Japan's educational standards have been degenerating for the last twenty years, and its system offers greatly reduced opportunities for students from socially disadvantaged backgrounds. Her argument can be reinforced by Abe Aya's empirical evidence on child poverty and social exclusion (Abe, 2008). In a misguided pursuit of "*yutakana*" society, the government has sacrificed the quality of life of people and their long-term benefits and opportunities.

Yet, preoccupation with economic growth at sacrifice of well-being remains dominant and pervasive. In the aftermath of the Great East Japan Earthquake, many authorities and pro-nuclear groups continue to insist that Japan's economy would be mired in prolonged decline and stagnation if the nation quits nuclear power; "the Institute of Energy Economics of Japan estimated that the country's gross domestic product could go down as much as 3.6 per cent if no reactors were allowed to restart; a no-nuclear scenario would lead to a rise in jobless claims by 197,000."⁶ They discuss the issues as if there were no alternative energy sources to generate electricity as well as employment opportunities. These examples of the use of



Japan's major nuclear power plants and the centers for nuclear waste disposal

growth- and profit-oriented incentives show that the clear identification of ends (namely, Japanese people's welfare) and making the plight of people affected by nuclear radiation an urgent political issue have been largely ignored in policy design. Similarly, a counter-argument can be drawn from the Stiglitz-Sen-Fitoussi report, which argues persuasively that increased fuel consumption would not only increase economic growth figures but also, for example, boost pollution and result in traffic jams and accidents. In short, these numbers do not necessarily reflect the objective of moving towards social progress and sustainable development (Stiglitz, Sen, & Fitoussi, 2009).

Fourth, just as the CA shows that conventional measures of well-being often ignore inequalities and injustice, it also notes the importance of sustainability. Atkinson et al. write: "Social indicators may be forward-looking. People are excluded not just because they are currently without a job or income, but also because they have little prospects for the future. Social exclusion is a matter not only of *ex post* trajectories but also of *ex ante* expectations" (Atkinson, Cantillon, Marlier, & Nolan, 2002, p.32). This suggests that issues of social exclusion and inequality are linked to the (un)likelihood of future improvement and empowerment. This brings us to issues of nuclear power and radiation. In the wake of the 3.11 earthquake tsunami and nuclear power meltdown, radioactive materials have heavily contaminated the soil, water, air and food in the Tohoku and Kanto regions, and may enter the food chain. To make matters worse, these substances, as in the case of Cesium-137 with its thirty year half-life, will linger for decades and profoundly affect people's well-being. *The New York Times* (August 8, 2011) reported on the immediate consequences for children in areas heavily affected by radiation: "Tens of thousands of children are being kept inside school buildings this hot summer, where some wear masks even though the windows are kept shut. Many will soon be wearing individual dosimeters to track their exposure to radiation." Similarly, *the Tokyo Shimbun*

(August 18, 2011) reported on 37 letters from the children of Fukushima written to governmental officials. They wrote: "I wish to play outside and breathe clean air"; "I wish radiation to be gone. I wish to be able to keep a dog" (5th grade girl); "Can I give birth to a normal baby? To what age will I be able to live?" (5th grade girl). Reflecting on questions of inter-generational injustice, the legacy of the current generation of adults is to leave future generations to bear the burden of nuclear disaster far into the future, as documented by filmmaker Michael Madsen's *Into Eternity*, which shows Finland's effort to dispose of nuclear waste. There, the safe storage of nuclear waste will require 100,000 years before it becomes harmless.



Rei Shiva's photo shows the deserted town of Futaba, inside the 20-kilometer evacuation zone in Fukushima prefecture. The irony is that the crossroad sign saying "With correct understanding of nuclear, (we have) a *yutakana* living." Another photographer, Ota Yasusuke shows in his blog the photos of the companion animals unintentionally abandoned after 3.11.

We have reflected on the limits of economic-centered measurements for determining whether a country is *rich* and its people have a superior quality of life. Also, we have reviewed Sen's warning that economy is just a means, and the possibility that policies based on "confusions of ends and means" may perniciously lead to misdiagnoses of social problems and misguided proposals for dealing with social problems (Sen, 2005, p. 4). Nevertheless, Japan has pursued its own path of development in terms of GDP expansion, perhaps neglecting "the really valuable ends" and the interests of many of its citizens, above all future generations (Sen, 2005, p. 4).

Sen's theory of democratic governance and famine prevention

Let us now turn to Amartya Sen's work on the causes of famines in non-democratic societies. In "Democracy as a Universal Value" (1999), Sen reports: "In the summer of 1997, I was asked by a leading Japanese newspaper what I thought was the most important thing that had happened in the twentieth century" (Sen, 1999, p.3). On reflection, he replied: "the rise of democracy (ibid.)." (Presumably it was not his implied criticism of Japan's politics and the media, given the time of the interview.) For Sen, democracy is by no means limited to voting and elections from among multiple parties. Rather, "democracy is best seen as 'government by discussion'", namely people's participation and public reasoning (Sen, 2009, p. 324). In his analysis of famine prevention, Sen emphasizes the importance of democracy and freedom of the press, arguing that "no major famine has ever occurred in a functioning democracy with regular elections, opposition parties, basic freedom of speech and a relatively free media (even when the country is very poor and in a seriously adverse food situation)" (ibid., p. 342). The Indian-born professor gives many historical examples of famines: "The prevalence of famines, which had been a persistent feature of the long history of the British Indian Empire, ended abruptly with the establishment of a democracy after independence (ibid.)." Another historical example was the massive famine in China during 1958-61 of the failed 'Great Leap Forward', which claimed close to 30 million of lives. Sen's theory about the close connection between famines and non-democratic regimes has been influential.

Sen emphasizes four ways in which democracy plays important roles in famine prevention: 1) intrinsic and constitutive importance; 2) political incentive; 3) instrumental and constructive aspects; 4) information (Sen, 2009, pp. 342-345). First, he argues that democracy has an intrinsic and constitutive importance for human life and well-being. Second, when democratic governments are accountable to their citizens, they can be subject to uncensored media coverage and severe public criticism. This gives governments strong political incentive to invest in famine prevention and eradication to retain power. Third, famine-affected populations usually make up a small proportion of the total population, which does not pose a very serious threat to the government. "What makes a famine such a political disaster for a ruling government is [however] the reach of public reasoning, which moves and energizes a very large proportion of the general public to protest and shout about the 'uncaring' government and to try to bring it down. ... Not least of the achievements of democracy is its ability to make people take an interest, through public discussion, in each other's predicaments, and to have a better understanding of the lives of others" (ibid., pp. 343-344). Thus, Sen notes its instrumental role: "democracy has an important *instrumental value* in enhancing the hearing that people get in expressing and supporting their claims to political attention" as well as a constructive role: "the practice of democracy gives citizens an opportunity to learn from one another, and helps society to form its values and priorities (Sen, 1999, p. 10). Fourth, another vital aspect of democracy is an informative role in disseminating information and knowledge through broadcasters and the press, and that allows the government to receive critical public scrutiny. Sen writes on the adverse aspects of non-democracy, for instance the failed 'Great Leap Forward', as follows:

Indeed, the lack of a free system of news distribution ultimately misled the government itself, fed by its own propaganda and by rosy reports of local party officials ... [The Chinese government] did not substantially revise its disastrous policies ... during the three famine years. The non-revision was possible not only because of the lack of a political opposition and the absence of an independent media, but also because the Chinese government itself did not see the need to change its policies, partly because it did not have enough information on the extent to which the 'Great Leap Forward' had failed (Sen, 2009, pp. 344-345).

In short, Sen underlines that authoritarian regimes have historically tried to hide or downplay the inconvenient facts of famines, and have failed to obtain accurate information about ongoing crises, which resulted in unduly delaying taking the corrective measures and aggravating the humanitarian situation. Therefore, he concludes that a phenomenon of famine is a complex man-made disaster rather than a natural calamity.

Failure of Information on Fukushima

When reflecting on media self-censorship, government whitewashes, and the history of India under British colonial rule, these historical events evoke memories of Japan. The country has experienced the post-occupational relationship with the USA, extended GHQ censorship under occupation (Okuizumi, 2000), continuous "Client State" (*Zokkoku*) status (McCormack, 2010), and a simulacrum of democracy where the Liberal Democratic Party ruled nearly non-stop for more than half a century until recently. This history suggests that some of the important roles of democracy (i.e., informative role) that Sen highlights may not have functioned well in Japan. Therefore, I find his critique peculiarly suggestive for analyzing the current nuclear disaster of Japan and reflecting on democratic process.

Let us review in a-question-and-answer format what has happened so far at the Fukushima Daiichi nuclear power plant of the Tokyo Electric Power Co. (TEPCO).

1. How did the Japanese authorities react in the early days of the nuclear crisis after the country was struck by earthquake and tsunami on March 11?

"[S]afety officials insisted repeatedly through the day that radiation leaks outside the plant remained small and did not pose a major health risk" (*NY Times*, March 12, 2011). Meanwhile, the first, third, and fourth reactor buildings of Fukushima Daiichi massively exploded within days (see Fujioka, 2011; Hirose, 2011); four explosions occurred by March 17 (*Reuters*, March 17, 2011).

"[Yukio Edano, the then chief cabinet secretary] declined to speculate on what the government could have done differently in the wake of the disaster on March 11 ... He said the tsunami was beyond anyone's imagination, rebutting critics who have said that government regulators and the Tokyo Electric Power Company, ... ignored warnings that the reactors were vulnerable. Detractors ... have also said that nuclear regulators and the power company did not act fast enough to prevent the explosions that damaged the reactor buildings, and that efforts to cool the reactors and spent fuel pools with helicopters and water cannons were ineffective." (*NY Times*, April 10, 2011).

As the word "*souteiga*" (beyond imagination) was often used to describe the Fukushima Daiichi accident at televised news conferences, the authorities displayed confusion, ill-preparedness, insufficient knowledge of nuclear and crisis leadership, and at the same time emphasized calming the public and downplayed the severity of the nuclear accident. Given growing distrust of the government, TEPCO, and the mainstream media, many people turned to alternative (particularly online) media for reliable information. The Ministry of Internal Affairs and Communications announcement calling for moderation in online news reports about the Fukushima Daiichi reactors on April 6, 2011 was reminiscent of wartime information management with its heavy censorship.⁷ Many of its reactions echoed the *daihon'ei happyou*, or force-feeding military propaganda conveying how well the war was going.

2. Why has information been withheld?

The authorities seem to have had strong political incentives to withhold information as they had long proudly insisted that a nuclear accident will never happen in Japan (see Hirose, 2011; Koide, 2011). There is evidence of a collusive nexus of vested interests, shared by government officials, politicians, nuclear industry executives, nuclear regulators, academics, and the courts⁸ to promote the nuclear power industry and to protect its interests (see, for example, "nuclear village" in Osnos, 2011; *NY Times*, May 16, 2011). Particularly, power companies have exercised huge economic and political influence over the government. "The Asahi Shimbun found that at least 448 of the [TEPCO] company's executives donated a total of 59.57 million yen (\$777,000) to a political fund-raising arm of the then ruling [Liberal Democratic] party between 1995 and 2009" (October 8, 2011⁹). By contrast, dissidents and anti-nuclear critics have been treated as heretics or outcasts. Pro-nuclear groups have tried to cover-up or minimize the severity of the disaster and the (long-term) effects of radioactivity. Major Japanese media colluded in part by restricting critical reporting and slighting the activities of protesters and dissidents. In the case of the big media, *voluntary* censorship was practiced to assure that their single largest advertising sector, the electric power companies, would continue their largesse.

3. What information was withheld? And, what are the implications for the public?

There were "many pieces of information the authorities initially withheld from the public" (*NY Times*, August 8, 2011). One important source of information is computer-based forecasts derived from the System for Prediction of Environmental Emergency Dose Information, or Speedi. Speedi was developed to provide "measurements of radioactive releases, as well as weather and topographical data, to predict where radioactive materials could travel after being released into the atmosphere" (*ibid.*). Its development reportedly took more than 20 years and cost more than 10 billion yen. *The New York Times* wrote that "the prime minister's office [under Kan] refused to release the results even after it was made aware of Speedi, because officials there did not want to take responsibility for costly evacuations if their estimates were later called into question" (*ibid.*). As a result, the data "was not released to the public until three months after the fact, and only then in materials for a conference overseas" (*ibid.*).

In response to the crisis, people living within 20 km of the plant were ordered to evacuate as a safety precaution. Without accurate information, many other people outside the evacuation zone escaped to areas deemed relatively safe. Some later discovered that they had been exposed to high levels of radioactive fallout which spread unevenly over large swathes of the Tohoku and Kanto regions in the immediate aftermath of the accident. The forecast data was made public too late to distribute iodine pills. Needless to say, exposure poses a range of potential health problems, particularly increasing the risk of thyroid cancer and other diseases including heart disease for children (see *Busby, 2011; Kodama, 2011*). Their exposure was neither inescapable nor necessary. The mayor of Namie in Fukushima charged that "The withholding of information ... was akin to 'murder'" (*NY Times*, August 8, 2011).

4. What are the major facts about the nuclear accident, the Japanese authorities' responses, and the Fukushima people as of October 28, 2011?¹⁰

- A nuclear melt-through took place in the first reactor building of Fukushima Daiichi. This is even more devastating than a core melt-down, and it is highly likely that nuclear fuel has melted through the outer vessels directly into the ground and groundwater near the coast, thus flowing into the seas and contaminating them. Since last March, Koide Hiroaki has urged TEPCO to use tankers to capture and securely dispose of a massive amount of contaminated groundwater and to build walls in the ground to prevent water from escaping into the ocean (*Tanemaki Journal Radio Interview, October 25, 2011*). *The suggested efforts have not been made.* At the second and third reactors which experienced full melt down, workers cannot even enter the buildings because of the elevated levels of radioactivity. Meanwhile, TEPCO announced that they have accomplished *reion teishi* or cold shutdown. According to Koide, it is deceitful to use the term, since it technically means that they are able to cool the nuclear fuel inside the reactor. In reality, the fuel has already melted and nobody knows where and how the fuel is situated and what its temperature is (Interview with Koide by Jimbo Tetsuo, September 8, 2011). Thus, nothing actually has improved since March. Since detailed information has not been made public, it is difficult even for nuclear experts to understand the situation (Interviews with Koide by Yoshida Terumi, October 17, 2011).

- Although the exact amounts and levels of radioactive materials being released into the atmosphere are unknown, it is certain that large amounts of radioactive materials have been dispersed not only across the Tohoku and Kanto regions but worldwide, including but not limited to the most deadly substances, notably cesium, plutonium, and strontium isotopes (see the map on Fukushima of Centre d'Enseignement et de Recherche en Environnement Atmosphérique¹¹). To be more precise, comparison can be made to historical data. 800 grams of uranium were burned when one atomic bomb annihilated Hiroshima city, while one ton of uranium is consumed each year at a nuclear power plant of one million kilowatts, an amount that is over 1000 times greater than the atomic bomb. The amount of cesium-137 released in the air from the Fukushima Daiichi, indicated in the Japanese government's report to the IAEA, is equivalent to 170 bombs dropped in Hiroshima. This estimate does not include other radioactive materials dispersed in soil and the cesium that entered the Pacific Ocean. Koide cautions that the government's reported numbers are bound to be underestimates (his speech on October 22, 2011).
- Contamination levels of local environment, foodstuffs, and drinking water in some areas exceed safety standards. The government has responded by raising the limits of allowed exposure. For example, under newly adopted Japanese regulations, 500 becquerels per kilogram of radioactive cesium in rice (the staple food for the Japanese) is certified safe for consumption. This is 500 times higher than the limit established before March 11 (Tanemaki Journal Radio Interview, October 12, 2011).
- The Japanese authorities give the false impression that residents will be able to return to live in evacuated regions after massive cleanup efforts of contamination. But in fact, as in the case of Chernobyl, the most contaminated areas will be uninhabitable for decades because of high radiation levels. The government has not yet explained this to the evacuated people. Moreover, the disposal of massive amounts of hazardous radioactive materials and fallout remains a large unresolved issue (Tanemaki Journal Radio Interview, October 18 and November 7, 2011).
- The government continues to withhold the Speedi data, even though crisis management officials in Shiga Prefecture, for example, have repeatedly requested the information. Shiga lies downwind of Fukui Prefecture with a fleet of aging nuclear reactors. Also, Shiga's Lake Biwa provides drinking water for nearly 15 million people in the Kansai region, which could be contaminated should a similar accident occur. Koide believes that the government refuses to release the data because hazard maps will provide conclusive evidence of potential disaster areas and make many locals anti-nuclear (TV interview on October 20, 2011, Kansai net).
- At least 70,000 people are still living in temporary accommodations eight months after the disaster with little indication of where they may be able to settle and find work. Given minimal assistance from the authorities, some Fukushima people call themselves *kimin*,¹² those who are abandoned by the government.

5. How has the Japanese public reacted?

On the one hand, anti-nuclear sentiment has been gaining ground. Nearly 60,000 people participated in the anti-nuclear demonstration on September 19, 2011 in Tokyo. Also, a protest petition (Goodbye to Nuclear Power Plants 10,000,000 People's Petition¹³) has been organized. Moreover, many citizen groups (including those who are new to political activism) stage anti-nuclear demonstrations and protests in front of TEPCO headquarters and the Ministry of Economy, Trade and Industry¹⁴ that oversees the nuclear power industry to call for an immediate shutdown of nuclear power plants in Japan. These citizens groups include Fukushima women,¹⁵ Japanese women and feminists,¹⁶ parents,¹⁷ and Buddhist monks at Eihei-ji which has eight million followers (the *Tokyo Shimbun*, October 7, 2011). Moreover, various citizens groups have tested for radiation in their communities and found hot spots contaminated with potentially harmful levels of radiation (*NY Times*, October 14, 2011). These anti-nuclear demonstrations and citizens' testing can be seen as a process "of public reasoning, which moves and energizes a very large proportion of the general public to protest and shout about the 'uncaring' government" (Sen, 2009, p. 343).

Above all, the trend of public opinion on nuclear energy after the accident has gone into reverse. A nationwide opinion poll (April 4) conducted three weeks after the Fukushima disaster by the *Yomiuri Shimbun* still found that the majority favored nuclear power plants: the country's nuclear power plants should be increased (10%), the status quo maintained (46%), decreased (29%), and abolished totally (12%). A public opinion poll (September 27) conducted by the Japan Atomic Energy Commission (Cabinet Office) found that the majority opposed nuclear power plants (98%): the country should abandon nuclear power immediately (67%) and phase-out (31%). The important reasons included the lasting harmful impact of nuclear power on the environment; Japan's frequency of earthquakes; and the unresolved issues of nuclear waste. On the other hand, with continued government suppression of information, many Japanese seem to be unaware of the magnitude of the continuing nuclear disaster and its consequences.

The Japanese government claims that the Fukushima Daiichi plant has been restored to a relatively stable condition, but its suppression of critical data strengthens suspicion that the claim is at best optimistic, at worst, patently false. Meanwhile, workers in the reactor, receiving significant doses of radiation, make continuous efforts to contain the ongoing disaster, which, by some measures, may prove to be the worst nuclear crisis in human history (*AFP news*, October 27, 2011). Already the nuclear accident has robbed tens of thousands of people of their livelihood, their homes, and their future, while scores of thousands more lost everything in the earthquake tsunami, including an estimated 25,000 dead or missing, and scores of thousands of homes, farms, and businesses.

Nevertheless, the mainstream media in Japan and internationally pay scant attention to the continuing crisis, as if the problems were already solved. Indeed, global public discussion, which peaked in the weeks after 3.11, is presently limited. Or, even if reported internationally, the implications and consequences of the nuclear accident are greatly underrated. For example, Evan Osnos in *The New Yorker* writes, "But, for a while, the Fukushima meltdowns have returned nuclear technology to its rightful place: a target for vigilance, scrutiny, and a healthy degree of fear" (*For more information, see the box*). By contrast, many respected nuclear experts such as Takagi Jinzaburo and Koide Hiroaki have warned that *there is no absolute safe threshold for human exposure to radiation*.

[How many people were killed so far by the Chernobyl nuclear disaster?](#)

Evan Osnos reports on the long-term effects of the 1986 Chernobyl accident as follows: "Five thousand cases have been discovered, but most are treatable; so far, approximately ten people have died. According to the World Health Organization, Chernobyl will eventually have shortened the lives of four thousand people." Janette Sherman however argues that the number of casualties is nearly 250 times higher than reported above. Dr. Sherman is a specialist in internal medicine and toxicology and has edited the book titled Chernobyl: Consequences of the Catastrophe for People and the Environment originally published by the New York Academy of Sciences in 2009; the book concludes that the death toll from the accident between 1986 and 2004 was 985,000: many died in utero. She explains the discrepancy in numbers between the book and the data given by international organizations such as the WHO as follows. The book she edited is drawn on over 5000 medical data (by those who actually observed the effects of exposure of Chernobyl, including medical doctors, veterinarians, epidemiologists, written in Russian, Ukrainian, and Belarusian), while the International Atomic Energy Agency (IAEA), for example, that promotes the use of nuclear energy gives the conservative estimate of victims (i.e., four thousand casualties), which is based on 350 mainly English articles. The book also criticizes the WHO, which has a 1959 agreement with the IAEA where one institution will not release a report without agreement of the other, which explains the consistent estimate of casualties between two institutions.

If many Japanese citizens outside Tohoku do not see themselves as victims or potential victims of serious radiation poisoning, it may be due in part to the *informational problems* we have pointed to, suggesting the need to compare the outcomes of famine in authoritarian regimes, as reviewed above. The danger is that lack of information will hinder people from understanding the nature and extent of the famines and finding best solutions for dealing with them. There are, of course, some major differences between the two situations. Famines were/are, generally speaking, short-range, visible, and regionally confined phenomena, however horrific. In the worst cases millions, or even tens of millions, may die of malnutrition and disease, and the problem may span several years. By contrast, radiation is completely invisible to human eyes, odorless, tasteless, and may spread across long distances through air and water. But exposure to radiation may have long lasting impact on the health of those exposed to it, not to mention unborn children. The Fukushima disaster will affect the environment throughout Northeast Japan, East Asia and worldwide including land, sea, and air. On the positive side, the globally interactive 21st century, including the press and a range of social media offer platforms for information distribution that increase the difficulty of suppressing inconvenient facts. As time has passed since 3/11, many people began to doubt the credibility of Japanese government and corporate reports and the news provided by major media on Fukushima. The result has been a firestorm of independent, and sometimes critical, assessments of official data, attempts at independent data collection, and attention to reports, official, unofficial, and online, in Japanese, English and other languages. This multiplicity of sources, languages, and locations makes it

possible to redeem the promise of democratic governance from below, to act as a check on government and to require it to take responsible action to inform and protect people from the dangers posed by the multiple 3.11 disasters.

Conclusion

We have explored Japan's recent experiences based on the capability approach, and seen that GDP figures may conceal negative impacts of growth on sustainability, environment, distribution, and different social groups (e.g., children, nuclear gypsies, *kasō* people, minority nationalities). This paper concludes that Japan's Fukushima disaster is a hybrid disaster resulting from a compound of both natural and man-made factors. Elements of the multiple crises and devastation caused by natural disasters such as the earthquake and tsunami can be resolved by repairing, rebuilding, and restoring the infrastructure of affected areas. The human-made disasters are, however, much more difficult to resolve, and it is here that the capability approach can offer practical guidance on how to reconstruct the country. What must be done immediately in the wake of 3.11 is to implement emergency measures to protect children and pregnant women from high levels of radiation (see the petition¹⁸). It is also essential to strengthen Japan's grassroots democracy to embrace plurality of arguments, people-led politics, independent media, and public participation to collectively assure government responsiveness to public concerns, accountability, and good governance. This is not impossible. It is evidenced in the significant increase of alternative information sites and growing anti-nuclear activism ranging from electronic media to mass demonstrations, and alternative energy approaches. As Sen (2009) points out, the practice of democracy is not a foreign concept or imported practice in Japan, indeed, a concept of "government by discussion" already existed in the era of Shōtoku Taishi in the early seventh-century, long before England's Magna Carta.

Nevertheless, it is likely that Japan will continue to pay for the "costly confusions of ends and means" of the past (Sen, 2005, p. 4). To avoid the same old mistakes and confusions over *yūtakasa*, the country needs to restore moral order and to make a seismic shift from GDP-oriented policy designs to capabilities and human development-focused ones, which will give the country a firm sense of direction. This will require breaking the iron nexus between corporate power, as represented by TEPCO and power companies on the one hand, and the government and major media on the other. The events of 3/11 and their aftermath can help our country to recognize that "people are the real wealth of nations"¹⁹ and that a decent *yūtakana* society should strive for an expansive conception of citizenship that will make possible the improvement of quality of life for all citizens, present and future, as well as contributing to the global community.

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Articles on related topics:

See the [guide to Japan's 3.11 Earthquake, Tsunami and Atomic Meltdown](#).

Notes

¹ This is from a speech given by Sir Richard Jolly at a workshop entitled "Twenty Years of Human Development: The past and the future of the Human Development Index" at the University of Cambridge on January 28, 2010.

² See the [report](#), accessed November 8, 2011.

³ See Japanese dissatisfaction in OECD's "Your Better Life Index" [survey of 2011](#), compared to 33 other country members. The Index notes that, "When asked, 40% of people in Japan said they were satisfied with their life, below the OECD average of 59%."

⁴ See [this link](#), accessed September 26, 2011.

⁵ See [this link](#), accessed November 3, 2011.

⁶ See [Evan Osnos' blog](#) (November 4, 2011), accessed November 6, 2011.

⁷ See [this link](#), accessed October 14, 2011.

⁸ See [NHK reports](#) on the court decision on the Onagawa case.

⁹ See [this link](#), accessed November 3, 2011.

¹⁰ This section draws heavily on information provided by Koide Hiroaki, a nuclear expert and critic of nuclear power at Kyoto University. See [this link](#), accessed October 14, 2011.

¹¹ See [this link](#), accessed November 3, 2011.

¹² See their [blog](#) on October 31, 2011, accessed November 8, 2011.

¹³ See [this link](#), accessed November 3, 2011.

¹⁴ See [this link](#), accessed October 21, 2011.

¹⁵ See [this link](#), accessed October 21, 2011.

¹⁶ See [this link](#), accessed November 3, 2011.

¹⁷ See [www.okaton.org](#) accessed November 3, 2011.

¹⁸ See the [petition](#), accessed November 14, 2011.

¹⁹ Mahbub ul Haq wrote in the first Human Development Report.