

東北地方太平洋沖地震

The Tohoku Pacific Offshore Earthquake March 11th 2011

Observations on the impact of a natural disaster on society and technology
in Japan, including thoughts on possible future developments

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Foreword

On March 11th 2011 at 14:46 JST a 9.0 magnitude earthquake struck under the seafloor off the Pacific coast of the north-eastern Tohoku region of Japan. The earthquake was the biggest ever recorded in Japan, and it set off a succession of tsunamis exceeding 10 meters in height in many locations. Hundreds of kilometres of coastline was swamped, and as of the time of writing over 28000 people are reported dead or missing. Communities, farms, fishing fleets and industry along the Tohoku Pacific coast were obliterated, and one nuclear power plant lost its cooling functions leading to a serious and ongoing release of radiation.

Now, over one month after the earthquake, the efforts are moving from rescue and recovery to reconstruction. This report is written with the goal to give some insights, in no particular order of importance, on the current situation in Japan, and to present thoughts on which social and economic trends could be worth deeper study in the coming months and years of reconstruction work.

Mikael Leppä
Helsinki, Finland, 2. 5. 2011



Part 1:

An Overview of Events on March 11th and After

Part 1 of this overview consists of Tweets and images covering the events starting with the Tohoku Pacific Offshore Earthquake on March 11th 2011 and the first 11 days of the unfolding crisis, as experienced from the safety of an office and home in Helsinki, Finland. This part of the overview was first published on www.mobileobservations.com on March 22nd.

March 11th, 2011

14:46 JST

While a normal morning was beginning in Helsinki, Finland, a 9.0 magnitude earthquake struck under the seafloor east of the Tohoku region in northern Japan. A good friend was on a train in Tokyo at the time, and got away a quick tweet: "Earthquake. Scary" as the train made an emergency stop.

As earthquakes are commonplace throughout Japan they are rarely mentioned, unless they are serious. Adding that "scary" was a chilling hint of what was to transpire.



Information Vacuum After 15:30 JST

In the first hours there was very little information available in western media. Twitter, however, was being flooded by messages from the ground all over Japan, and the situation did not sound very good.

In Tokyo @stevenagata took great initiative in training his webcam on his TV running a constant emergency news broadcast from national broadcasting company NHK, and streaming it on Ustream. In a time of uncertainty about the safety of family and friends, this was an invaluable source of much needed information for anyone outside Japan (NHK started their own Ustream channel later).



No Connections Evening, March 11th

Within minutes of the earthquake two of the three major mobile carriers, NTT DoCoMo and Softbank, ran into trouble, seeing their voice call services go down in Tokyo and in the north. The third major carrier, AU seemed to come off better, being able to continue providing some services over increasingly congested networks. With mobile voice calls and SMS nearly impossible, and public phones (which quickly were made free to use) swamped by crowds, Twitter came through shining as an efficient, instant and low-data-intensive form of communication from the very start of the events.



People waiting to use public phones, Tokyo, evening of March 11th
Image Source: tokyobling.wordpress.com, published under CC license

Twitter Provides Essentials in a Crisis

In times of great change and uncertainty information is the most valuable asset. With all major news organisations scrambling to cover what was still a very confusing and developing situation, Twitter users were already sharing and forwarding eyewitness accounts and links to vital emergency information. Twitter has continued to be highly relevant in the areas struck by disaster, providing homeless and displaced people with information on emergency shelters and other services.

Twitter has also become a serious contender to mainstream media in sensitive times such as this, allowing people to fact-check and challenge articles publicly. During the first hours of the disaster a CNN anchors unfortunate Godzilla remarks over fresh tsunami footage were quickly noted and spread, and days later FOX News inclusion of a Tokyo nightclub in a map of Japanese nuclear power stations was soon very well known and ridiculed.



Still, Twitter is Nothing Without Content

After things settled down a bit during the first days and foreign media managed to gather, there began to be more in-depth analysis of the situation also for non-Japanese speakers. The English language Twitter-sphere soon became a competing ground for news links, and for discussion how reliable or unreliable these were.

Officials took notice, and soon the Japanese prime ministers office, the Japanese Self Defence Forces and Tokyo Electric Power Company had Twitter accounts also in English trying to deliver their official statements to an international audience increasingly affected by sensationalistic headlines, especially with regards to the reactor cooling trouble and subsequent radioactive fallout caused by the quake-tsunami dual punch to the Fukushima Daiichi nuclear power plant.

Naturally these same patterns were to some extent taking place in the Japanese language Twitter-sphere as well, but in general the local media gave a much more balanced view between the human catastrophe in tsunami-hit areas and the nuclear power plant troubles.



Which Contents is Trustworthy?

Initial uncertainty and gaffes aside, a few days into the non-stop coverage it began to seem as though some media outlets wanted to get all possible drama out of the disaster, even if it meant stretching the facts. During the first week the worst hit areas in Tohoku, not to mention the troubled Fukushima nuclear plant, were difficult to access, preventing news crews from going on site in convenience.

Those journalists who did venture into the disaster area during the first week made in general good reports under difficult circumstances, but in contrast perhaps some found it easier to stay close to all comforts in Tokyo, and from there try to create the stories they thought would catch readers attention.

Bloggers quickly took upon themselves to rectify this shoddy journalism conducted by some (though not all) foreign media representatives, and a stark contrast to the stories describing people fleeing elevated radiation levels and empty food shelves in Tokyo started to emerge for those who were interested enough to look.



An Irradiated Ghost City in Panic? Not Really

While the true crisis was up to the north of Tokyo, a disproportionate amount of media coverage was directed on life in the capital. Tokyo was indeed affected, with locals saying the earthquake was the strongest they'd ever experienced in the city. However, material damage was relatively minimal, and mainly the citizens have only suffered inconvenience through some cuts and shortages in utilities, a continuing need to save electricity, and less punctual and frequent commuter train services. Apart from these locals report that life has continued quite normally, and the overbearing concern is for those in true danger and need up in Tohoku.



Commuter train with dimmed lights for saving electricity, Tokyo
Image Source: tokyobling.wordpress.com, published under CC license

The Internet Delivers

With the (mostly) western media having a field day with crisis reporting local bloggers have been doing their best trying to convey a message of normality. When headlines were touting impending doom in the form of radioactive clouds heading for Tokyo, or electricity, water and food shortages, local trend office CScout posted tongue-in-cheek accounts of their success in ordering mineral water home delivered directly from e-commerce site Rakuten, and worrying about serious shortages of thon crudités and mozzarella at the local deli.

To their great credit the CScout crew did not only indulge in their web purchases by themselves, but also put in a highly commendable effort in gathering and delivering aid supplies to disaster struck areas to the north of the capital.

Water suggestion: Use the internet

By Michael Keferl Published: March 15, 2011

Posted in: DIGITAL LIFE, LIFESTYLE / FASHION

Tags: Earthquakes , Rakuten , Tsunami

Comments [7]



Like



Sign Up to see what your friends like.

...we order it on Rakuten and have it delivered.



Stay calm people. You can still get supplies.

Image Source: www.japantrends.com

In the Aftermath; Caring

With the true magnitude of the disaster becoming evident, the Japanese seem in general to have taken it all in stride and buckled up for the rough ride ahead. Twitter messages have shown there is a strong we'll-get-through-this attitude, which is warranted by the country's long history of living with natural disasters.

Amid all the tragedy a feeling of general caring has spread among the public even up to the level of government: Chief Cabinet Secretary Yukio Edano, the government's main spokesperson during the continuing crisis management efforts, reportedly didn't have time to sleep properly for over 100 hours after the quake and tsunami, being required to make official statements on the situation often a many times per hour. The Twitter hashtag #edano_nero (Get some sleep Edano) quickly became a meme spread by people who admired his strong commitment, but were ultimately concerned for Mr. Edano's health.

On a more sour note another hashtag #kan_okiro (Kan, wake up) started appearing, referring to the rarity of seeing prime minister Naoto Kan appear at critical news conferences. After a quite strong aftershock close to the still active iconic volcano Mt. Fuji west of Tokyo #fujisan_nero (Go to sleep, Mt. Fuji) soon appeared in tweets. At the time of writing Fujisan has still heeded this order.



It's Not Over Yet

It will take years for the material to be restored, and as for the human aspect there are those who will never find restoration. Still, if any nation on earth can take a magnitude 9.0 earthquake and rise up stronger from it, that would be Japan. We can see the first steps taken in that direction already now.

The following pages will cover some themes set in motion by this disaster, which might deeply affect Japan as a nation and as a society in the years to come.



Part 2:

Possible Future Implications

Part 2 of this overview presents various issues which might warrant further study and in the coming months and years of reconstruction work. These are presented in no particular order, and in the firm belief that the best way to help the rebuilding efforts of the affected areas is to invest in new and sustainable communities and technologies.

Commitment

In reporting on the unfolding disaster, domestic media has been regarded as more honest, albeit vague, by the Japanese compared to major foreign news networks. Comments indicate Al Jazeera and BBC are still trusted, but especially CNN has let many down with their sensationalistic angle in Japan's time of need. In Japanese media the seriousness of the problems at the Fukushima Daiichi nuclear power plant, the western media's darling disaster, has not been downplayed in any way, but due emphasis has been put on reporting the suffered trauma of the struck Tohoku Pacific coast.

The nuclear fear-mongering by some western media, which led to panic among ex-pat groups in Tokyo and prompted many foreign professionals to leave the country with little or no notice, has not been appreciated in Japan. There are those in Japan now who feel the western news networks were out for a quick story of disaster, and latched on to an easy one of nuclear catastrophe, which ultimately can be very harmful for the image of Japan and Japanese products abroad, instead of the more slowly developing and harder to access human tragedy

To be fair, the general media focus seems now to be turning more towards the human suffering experienced in quake and tsunami hit areas, as the emergency cooling efforts at the Fukushima Daiichi nuclear plant apparently begin to take effect, and connections to the worst hit areas in Tohoku are being established. Still, in many cases the damage has already been done, with Japanese products and foodstuffs are being shunned abroad out of irrational radiation fears.

In future business relations with Japanese counterparts it is worth keeping in mind that the general perception of foreign professional's commitment to their work has taken a serious hit. Japanese companies want to restore normality and form new contacts with foreign counterparts in order to rebuild the Tohoku region. However, some will be wary about forging deeper commitments, having seen or heard of foreign professionals deserting their posts based on often unfounded rumours in the media of their home countries. Showing sincerity and commitment to long lasting business deals in a tactful way will be of high value in future dealings with Japanese businesses.

Communication

From the very start of the disaster one form of communication in particular showed its strength: Twitter. Very soon after the initial earthquake two of the three major mobile carriers, NTT DoCoMo and Softbank, lost their networks, as infrastructure and power supplies were damaged. The third major carrier, number two by subscriber volume KDDI, fared a bit better initially, but also this network was soon overwhelmed. With voice communications, e-mail and SMS services all but non-existent for the public, Twitter, with its low data usage managed to stay active and relevant throughout the initial crisis and beyond.

Information is the most valuable asset in a crisis, and new ways will have to be found to deliver it in situations like the one experienced in Japan. Many both in Japan and in the west have criticised the Japanese authorities often vague and slow delivery of information. While this way of presenting only facts and not elaborating much has been the accepted way in Japan until now, it has proved to be counterproductive. Crisis communication should be one area to develop, if Japan wants to avoid speculations and half-truths to spread in foreign media in the future.

On a smaller, but no less important scale, the communication needs of private citizens will also need to be addressed. As Japan has a very mature and developed ecosystem of mobile devices, using them as a primary medium would seem as a natural choice. As this disaster showed, even in a time of crisis and failing phone networks low data-intensive communication methods like Twitter were able to keep functioning. Services like this can aid in initial spreading of emergency information and in coordinating emergency responses.

Once the rescue phase of the crisis has given way to relief work and rebuilding, new communication needs have become apparent. With hundreds of thousands of people spread out in emergency shelters with poor road conditions and few supplies needed for daily life, information can be essential for survival. As most Japanese mobile phones are internet capable, and a large number have digital TV receivers, the options in medium are many. Needed services can range from general survival skills to e-health services for cut-off shelters, and e-education for both children and adults. Foreign expertise in such areas could be very welcome for future needs.

Robotics

As news reports were showing pictures of large hydrogen blasts and speaking of elevated radiation levels at the troubled Fukushima Daiichi nuclear power plant, many certainly wondered why a world-leading country in robotics like Japan still was relying on humans to carry out the dangerous crisis management efforts there.

Media sources indicate there were indeed remotely operated or semi-autonomous radiation measuring vehicles operating initially on the plant grounds, and more have arrived since, but the actual emergency containment and repair work seems to be done largely by a human crew at one point iconized as the Fukushima 50 (though the number of people involved has varied from about 50 to several hundred throughout the crisis).

The simple truth may be that robotics still just isn't advanced enough to reliably handle a situation like this. The incentive to develop robots to handle disasters like this will certainly be strong, however, and as Japan already has a strong R&D effort in place there will almost certainly be progress in this field within some years.

Another task robots might be called to perform in a near future is search and perhaps rescue operations in natural disaster areas such as those experienced in Tohoku now. A tireless rescue force able to operate in all weather and lighting conditions would certainly be a welcome addition to the already efficient Japanese disaster response organisation. Cutting-edge development like this will naturally create an eventual trickle-down effect of robotics into the consumer goods category.

While Japan is a world leader in robotic technologies, foreign companies should still not disregard the opportunities of cooperation in this field. Robotics study in Japan has concentrated to fields like production industry, healthcare, elderly care and social applications. Specialised robotics knowledge can be very welcome if it is related to crisis management or relief work in some way.

Energy

Needless to say, trust in nuclear power has been badly shaken in Japan. After the earthquake 11 reactors are off the grid in north-eastern Japan, totalling about 9.7GW worth of output. Some estimates put the remaining nuclear power generating capacity of the affected area at only 27% of the theoretical maximum. As a historical curiosity started by two rival electrical companies, one in Tokyo and one in Osaka, in the late 19th century, Japan is divided into two grids: One at 50Hz covering Tokyo and the north of the country, and one at 60Hz covering the rest.

This incompatibility in the grid is bridged by only three converting stations, having a combined capacity of 1GW. This has led to a situation where Tokyo and the north are currently facing a severe and possibly prolonged shortage of electricity, especially in the upcoming hot summer months when air conditioning systems are a major power consumer, while the rest of the country can offer little but sympathy. Creating a unified national electric grid for Japan will certainly be on the agenda sometime in the future, though the scale of the project is huge.

Investment in renewable energy infrastructure will certainly see a boost in the future as a result of the events following the earthquake. Wind, solar, geothermal and hydroelectric power are not yet widely developed means of electricity production in Japan, and foreign expertise in these fields can be very welcome. Domestic companies and local governments are likely to invest in expanding the renewable energy infrastructure.

Japan's car industry has invested heavily in electric vehicles, driving the research and development of advanced battery technology. This, combined with existing renewable energy sources like wind, solar and geothermal energy can become a possible future development path for Japan, not to mention probable renewed interest and sense of urgency in other new energy research. Still, for the near future the solution might just be to remember to switch off the extra lights and keep the existing nuclear capacity going.

Ecology

The Tohoku area and greater Tokyo have so far managed to avoid major unpredicted blackouts due to strict electricity saving efforts, and a general awareness among the public on electricity saving requirements. However the cooler spring weather currently experienced in Japan has greatly helped these efforts. The true test will be the upcoming hot and humid summer months.

Officials, businesses and private citizens are all well aware of this, and actions reducing the peaks in electricity demand are being planned. Some solutions might be for companies to encourage more flexible working times, thus lessening the strain on the grid of rush hour commuter traffic . Also longer summer holidays and more relaxed and cooler dress codes for business occasions might be implemented, reducing the needs for office air conditioning.

Already before the disaster Japan had been seeing a strong ecology trend; Sometimes sincere, and sometimes with a feeling of green-wash. However, there is a strong awareness of environmental issues already in place among the public, and the current crisis can give

Some the needed incentive to cut back on energy consumption and adopt more sustainable living habits permanently.

Despite all this Japan is still a society very much inclined towards convenience. It has jokingly, but not entirely unfoundedly, been said that Japan needs at least one nuclear power plant to run the hundreds of thousands of drink vending machines found all over the country even in the most unlikely places, and a few plants more to run the 24H open convenience stores which are almost as frequent.

Any business providing products, services or know-how for saving electricity without sacrificing too much convenience should have a very receptive market in Japan for several years into the future. Other future trends could be that people switch into slow-life mode, finding a lifestyle which uses less resources overall, and perhaps increased electricity generation on a household level.

Infrastructure

One thing which has been noted with astonishment in foreign media is the speed and efficiency at which vital infrastructure has been repaired. Even though there has been critique towards the government for lagging in the response to the crisis, the speed at which vital roads and communications have been restored by local officials, the Japanese Self Defence Forces and US forces stationed in Japan has been impressive.

Japan as a society is naturally very well prepared for large natural disasters due to the country's history of constantly experiencing them. Construction methods, rescue services, health care and both national and local administration have been adapted to the possibility of such an event as is currently experienced.

There is perhaps little foreign experts and businesses can contribute to this well planned and constantly rehearsed crisis management system in place in Japan. Rather Japan might in the future use the experiences from this disaster in aiding other parts of the world which are at risk of experiencing something similar.

There are, however, niche expertise related to infrastructure development which can be very welcome in Japan in the future. As noted earlier in this report, crisis communication systems will see continued development, and foreign expertise in this area can be very welcome.

All municipal services could also be further adapted to operations in the event of a crisis. Education and health care done via networks was already touched upon earlier in this report, and one very concrete example can be seen in the current lack of functioning toilets in the areas affected by the earthquake and tsunami. Both public and private toilets in Japan are heavily featured by western standards, and thus rely on a steady supply of water and electricity. Waterless toilet technology might be a popular research subject in the future.

A New Start

Ultimately, the earthquake and tsunami will be a test of Japan's national unity and collective will to rebuild. There is no question that Japan has managed huge rebuilding efforts several times throughout its history, but this time the demographic outlook is slightly different:

An ever shrinking working age population is trying to take care of an increasing population of elderly, and now facing the challenge to rebuild after the biggest quake since records began in Japan on top of that. A rising national debt and an economy trudging on in stagnation for two decades according to some observers were only some of the discussed problems Japan faced even before the quake. The best way for foreign individuals and businesses to help Japan now is to treat both its people and its products with trust, and actively engage in cooperation that benefits both sides.

Prime Minister Naoto Kan has said the earthquake is the biggest disaster to hit Japan since the Second World War. Accordingly, the aftermath faced now should need a something similar to the combined effort by the nation in the 1950's and -60's, when Japan got picked up from the ashes of defeat and was transformed into a modern and prosperous nation.

Now that modern and prosperous nation has perhaps come to a new watershed moment in its history: One could sense the younger generations struggling against the glass roof set by their seniors in the Japanese society before the quake. Parents had enjoyed job security, stability and material prosperity, which the recent graduates and students felt they would never be able to achieve.

After this quake, Japan will need all the brain and muscle available, and if both young and old can overcome the gap between them and cooperate for the greater good, then this catastrophe can perhaps in the future be seen as the starting point of a truly new post-industrial society. A society which has learned the hard way to live with the forces of nature, and prevailed. A society, which because of tragedy became more caring, communal, innovative and open, and which can serve as a model for other developed nations facing the same challenges which Japan was facing before the earth moved off the Tohoku coast at 14:46 on March 11th 2011.

Thank You

For further information, comments and opinions, please contact
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